



LAWRENCE
LIVERMORE
NATIONAL
LABORATORY

Lawrence Livermore National Laboratory

Emergency Plan

Revision 19

Emergency Management Department

January 2014

Auspices Statement

This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

Lawrence Livermore National Laboratory EMERGENCY PLAN

(Rev. 19)

January 2014

Reviewed:



John D. Richards
Emergency Management Subject Matter Expert

1/29/14

Date

Concurred:




Jerry Paulson
Emergency Programs Organization Manager

1-29-2014

Date

Approved by:



James D. Colson
Emergency Management Department Head

1-30-14

Date

Revision Log

Revision/TCN Number	Affected Page(s)	Effective Date
Rev. 8	All	September 2005
Rev. 9	All	January 2006
Rev. 10	All (annual review)	January 2007
Rev. 11	All (Annual review and transition incorporation)	March 2008
Rev. 12	All (Finalization of Interim Plan)	July 2008
Rev. 13	All (Incorporation of SEMS/NIMS concept of operations and Emergency Management Duty Officer role)	October 2008
Rev. 14	All (minor changes made since issuance of Rev. 13)	January 2009
Rev. 15	All (annual review)	January 2010
Rev. 16	All (annual review)	January 2011
Rev. 17	All (annual review) – incorporated concepts of the LLNL Emergency Communications Plan	January 2012
Rev. 18	All (annual review)	January 2013
Rev. 19	All (annual review and realignment of sections with DOE guidance)	January 2014

This page intentionally blank

TABLE OF CONTENTS

1	INTRODUCTION.....	6
1.1	PURPOSE	6
1.2	SCOPE	8
1.3	CONCEPT OF OPERATIONS	8
1.4	SITE DESCRIPTION	14
2	EMERGENCY RESPONSE ORGANIZATION	28
2.1	LLNL ORGANIZATION STRUCTURE	28
2.2	EMERGENCY DIRECTION AND CONTROL.....	31
2.3	EMERGENCY MANAGEMENT OPERATIONS AND PERSONNEL.....	37
2.4	ACTIVATION OF THE EMERGENCY RESPONSE ORGANIZATION AND RESPONSE FACILITIES	46
2.5	DECLARATION OF AN EMERGENCY	47
2.6	OTHER EMERGENCY RESPONSE ASSETS	48
2.7	ERO POSITIONS	50
3	OFFSITE RESPONSE INTERFACES.....	53
3.1	OVERVIEW	53
3.2	OTHER FEDERAL AGENCIES	55
3.3	TRIBAL ORGANIZATIONS.....	55
3.4	STATE GOVERNMENT	55
3.5	LOCAL ORGANIZATIONS.....	57
3.6	PRIVATE ORGANIZATIONS.....	59
3.7	MEMORANDA OF UNDERSTANDING/MEMORANDA OF AGREEMENT	60
3.8	OFFSITE MEDICAL FACILITIES.....	61
4	EMERGENCY RESPONSE FACILITIES AND EQUIPMENT	62
4.1	EMERGENCY FACILITIES	62
4.2	EMERGENCY EQUIPMENT	67
5	EMERGENCY CATEGORIZATION AND CLASSIFICATION.....	72
5.1	DEFINITIONS	72
5.2	CRITERIA FOR OPERATIONAL EMERGENCIES NOT REQUIRING FURTHER CLASSIFICATION	74
5.3	EMERGENCY ACTION LEVELS	75
6	EMERGENCY NOTIFICATIONS AND COMMUNICATIONS	78
6.1	NOTIFICATIONS.....	78
6.2	COMMUNICATIONS	81
7	CONSEQUENCE ASSESSMENT.....	84
7.1	CONSEQUENCE DETERMINATION	84
7.2	COORDINATION.....	86
7.3	EMERGENCY PLANNING HAZARDS ASSESSMENTS.....	86
8	PROTECTIVE ACTIONS AND REENTRY	87
8.1	PROTECTIVE ACTION CRITERIA.....	87

8.2	RECORDS.....	88
8.3	PROTECTIVE ACTION IMPLEMENTATION.....	89
8.4	REENTRY.....	91
8.5	EMERGENCY PLANNING ZONES.....	91
8.6	COMMUNICATION	94
8.7	TERMINATION OF PROTECTIVE ACTIONS	94
8.8	SHUTDOWN OF OPERATIONS	94
9	EMERGENCY MEDICAL SUPPORT	96
9.1	MEDICAL RESPONSE SYSTEM.....	96
9.2	STAFF	97
9.3	EQUIPMENT AND SUPPLIES	97
9.4	TRANSPORTATION AND EVACUATION.....	98
9.5	COMMUNICATIONS	98
10	EMERGENCY PUBLIC INFORMATION.....	100
10.1	PUBLIC INFORMATION ORGANIZATION	100
10.2	PUBLIC INFORMATION FACILITIES.....	101
10.3	PUBLIC EDUCATION.....	102
10.4	PUBLIC INQUIRIES.....	102
10.5	SECURITY.....	103
10.6	NATIONAL NUCLEAR SECURITY ADMINISTRATION FIELD AND HEADQUARTERS COORDINATION	103
11	EMERGENCY TERMINATION AND RECOVERY	104
11.1	EMERGENCY TERMINATION	104
11.2	RECOVERY OPERATIONS	104
12	PROGRAM ADMINISTRATION	108
12.1	EMERGENCY PROGRAMS ADMINISTRATION.....	108
12.2	DOCUMENTATION	108
13	TRAINING AND DRILLS.....	110
13.1	COURSES	110
13.2	TRAINING REQUIREMENTS	110
13.3	EXAMINATIONS.....	111
13.4	RECORDKEEPING	111
13.5	SITE PERSONNEL.....	112
13.6	OFFSITE TRAINING SUPPORT	112
13.7	OFFSITE PERSONNEL TRAINING.....	112
13.8	INSTRUCTOR TRAINING AND QUALIFICATION.....	113
13.9	DRILLS	113
14	EXERCISES	114
14.1	EXERCISES	114
14.2	OFFSITE COORDINATION	116
15	READINESS ASSURANCE	117
15.1	SELF-ASSESSMENT	117

15.2	CORRECTIVE ACTION PROGRAM	117
15.3	LESSONS-LEARNED PROGRAM	117
	ACRONYMS & DEFINITIONS.....	118

LIST OF FIGURES

Figure 1.1	Site 200 Hazardous Facilities.....	18
Figure 1.2	Site 300	19
Figure 1.3	Local Area.....	22
Figure 2.1	LLNL Organization	30
Figure 2.2	LLNL Emergency Response Organization	32
Figure 2.3	Emergency Response Command and Control	35
Figure 2.4	HAZWOPER Levels.....	37
Figure 2.5	Emergency Operations Center	40
Figure 2.6	Basic DOC Structure.....	42
Figure 8.1	LLNL Livermore site Emergency Planning Zone	92
Figure 8.2	LLNL Site 300 Emergency Planning Zone	93

LIST OF TABLES

Table 2.1	EOC Functional Areas	39
Table 2.2	Activation of Emergency Operations Facilities and Selected Response Assets...	47
Table 4.1	Communications Equipment.....	68
Table 5.1	Potential Indicators for OEs Not Requiring Further Classification	74

EXECUTIVE SUMMARY

The Lawrence Livermore National Laboratory (LLNL) Emergency Plan (EPlan) documents the concepts for preparedness and response to Operational Emergencies (OEs) or any unplanned, significant events, or abnormal conditions that require time-urgent response. The LLNL Emergency Plan provides an overview of the roles, responsibilities, and lines of authority for the Emergency Response Organization (ERO). The ERO maintains the capability to respond to and mitigate the effects of hazards associated with emergencies; to direct protective actions (PAs) for site personnel; to notify offsite agencies and provide protective action recommendations (PARs) for the public; to recover from an OE, minimizing impact to onsite operations and security; and to limit adverse impacts to the environment.

The LLNL EPlan and associated Emergency Plan Implementing Procedures (EPIPs) address the contractor applicable requirements of Department of Energy (DOE) Order 151.1C, *Comprehensive Emergency Management System*.

A summary of the contents of each section in the Emergency Plan follows:

- | | |
|------------------|--|
| Section 1 | Provides an introduction to the Emergency Plan by stating the mission of LLNL, followed by the purpose, scope, and concept of operations, to include a description of both the OE Base Program and the OE Hazardous Material Program. Site and facilities descriptions and a summary of the hazards survey/hazards assessment process for LLNL are included. |
| Section 2 | Describes the overall organizational structure of the site and the ERO, which emphasizes responsibilities, lines of authority, and command and control of preparedness and response elements. |
| Section 3 | Describes the interface with those Federal, State, and local agencies that may be involved in a response to an OE. Includes information on formally-documented agreements with offsite agencies. |
| Section 4 | Describes emergency response facilities and equipment that might be used during an emergency or recovery. |
| Section 5 | Defines OEs and provides an overview of the process used for categorization and classification of OEs at the Laboratory. Discusses the emergency action levels (EALs) used to declare an OE. |
| Section 6 | Describes the notification process for onsite and offsite notifications. Also describes communications to onsite personnel and offsite agencies. |
| Section 7 | Describes the process for performing an initial consequence assessment to support the impact of a release of radioactive or other hazardous materials. Describes the continuous process of refining those initial assessments as more information and resources become available. |

- Section 8** Outlines protective actions based on protective action criteria. Defines the Laboratory emergency planning zones (EPZs), and provides information on personnel accountability, emergency evacuation, communications, and termination of protective actions. Provides general guidelines for reentry during an OE.
- Section 9** Describes onsite medical facilities and capabilities, staff, and equipment. Describes mutual aid agreements for offsite medical assistance.
- Section 10** Describes the emergency public information program and organization that provides information about the emergency to news media and the public. Includes a discussion of the Joint Information Center (JIC).
- Section 11** Establishes criteria for termination of an OE and the transition to the recovery phase.
- Section 12** Describes emergency preparedness program administration and document control.
- Section 13** Describes emergency preparedness training and drills for elements of the ERO and describes training structure.
- Section 14** Outlines the process for scheduling, coordinating, conducting, and evaluating emergency preparedness exercises.
- Section 15** Describes emergency preparedness readiness assurance, including self-assessments, corrective actions, and lessons-learned.

1 INTRODUCTION

1.1 Purpose

The purpose of the Lawrence Livermore National Laboratory (LLNL) Emergency Plan (EPlan) is to document LLNL's system for emergency program administration, preparedness, response, and recovery from unplanned, significant events, or abnormal conditions requiring time-urgent response, including Operational Emergencies (OEs). The EPlan addresses the contractor applicable requirements of Department of Energy (DOE) Order 151.1C, *Comprehensive Emergency Management System*, and provides an overview of the roles, responsibilities, and lines of authority for the Emergency Response Organization (ERO). The EPlan also describes the interfaces and coordination with offsite agencies that provide community awareness and protection through notifications, protective action recommendations, and mutual aid.

The concepts outlined in the EPlan provide for the protection of workers, responders, the public, the environment, and national assets. Detailed processes for implementing the concepts described in the EPlan are described in Emergency Plan Implementing Procedures (EPIPs). EPIPs describe the ERO, including all aspects of emergency preparedness, response, and recovery.

LLNL uses the California Standardized Emergency Management System (SEMS) to manage response to emergencies. SEMS was established in 1992 in the California Code of Regulations, Title 19, Division 2. The use of SEMS standardizes throughout the State the response to emergencies involving multiple jurisdictions or multiple agencies. SEMS is intended to be flexible and adaptable to the needs of all emergency responders in the State.

SEMS incorporates the use of the National Incident Management System (NIMS), the Incident Command System (ICS), Multi-Agency Coordination System (MACS), the California Master Mutual Aid Agreement, existing mutual aid systems, and Operational Area Concept.

DOE Order 151.1C, *Comprehensive Emergency Management System*, states that the established ERO at each DOE/National Nuclear Security Administration (NNSA) site has the overall responsibility for the initial and ongoing response to and mitigation of an emergency. Control at the event/incident scene must be consistent with the National Incident Management System's Incident Command System.

This EPlan implements the emergency planning requirements of DOE Order 151.1C, Contractor Requirements Document (CRD), et seq., and complies with NIMS/SEMS requirements.

Nothing in this plan shall be considered to limit the use of good judgment and common sense in matters not foreseen or covered.

1.1.1 Update of the Emergency Plan and Emergency Plan Implementing Procedures

The EPlan and EIPs are reviewed annually and revised as needed. A major revision requires formal approval and involves a substantive change, such as work scope, performance responsibilities, work processes that mitigate hazards, and requirement changes. Minor revisions in EIPs, such as adding, changing, or deleting the use of specific forms, can be completed via the Temporary Change Notice (TCN) process. EPIP-141, *Emergency Programs Administration*, contains more information on the revision process.

Updates to the EPlan are reviewed by:

- Deputy Director
- Environmental Functional Area Manager
- Worker Safety & Health Functional Area Manager
- Radiation Protection Functional Area Manager
- Health Services Department Head
- Environment, Safety, and Health Director
- Maintenance & Utility Services Department Head
- Facilities & Infrastructure Associate Director
- Nuclear Operations Associate Director
- Operations and Business Principal Associate Director
- Security Organization Director
- Public Affairs Office Director
- Laboratory Counsel
- Emergency Programs Organization Manager

The review and signature of the Emergency Management Department Head represents formal LLNL approval.

1.1.2 Distribution of Copies

Controlled copies of the EPlan are stored in the Emergency Programs Organization (EPO) files and are provided to the Emergency Operations Center (EOC), the National Nuclear Security Administration/Livermore Field Office (NNSA/LFO), and others as per established distribution lists. Uncontrolled copies of the EPlan are maintained on the Emergency Programs Organization Emergency Preparedness & Planning website, distributed within LLNL, Lawrence Livermore

National Security, LLC (LLNS) Parent Oversight Office, and are offered to appropriate offsite entities listed in Section 3.1.

1.2 Scope

This EPlan addresses and applies a description of emergency preparedness and response to OEs as defined in the CRD of DOE Order 151.1C. The EPlan applies to the Livermore site (Site 200), Site 300, and LLNL facilities contained therein; additionally, it applies to the employees, visitors, and contractors performing work onsite for the Laboratory. This plan does not cover LLNL operations or facilities at the Nevada Test Site.

1.3 Concept of Operations

When an OE occurs, the EPlan, through the EPIPs, is invoked for response to the emergency. Routinely designated LLNL emergency responders, such as fire, Environment, Safety, and Health (ES&H) Teams, Hazardous Material (HazMat), medical/emergency medical services, and Security Organization/law enforcement, provide on-scene response. The Incident Commander (IC) directs on-scene emergency response.

The Emergency Management Duty Officer (EMDO) is onsite or on-call at all times, and is responsible for categorizing OEs and further classifying OEs as Alerts, Site Area Emergencies, or General Emergencies, if required. The EMDO is also responsible for making initial required DOE and offsite agency notifications within fifteen (15) minutes of the declaration of an Alert, Site Area Emergency, or General Emergency, and within thirty (30) minutes of the declaration of an OE Not Requiring Further Classification. In addition, the EMDO is responsible for activating the ERO. Activation level may be determined in consultation with the Laboratory Emergency Duty Officer (LEDO). The LEDO, who is onsite or on-call at all times, represents the Laboratory Director.

Support to the EOC is provided by Department Operations Centers (DOCs) including Security Organization's Tactical Operations Center (TOC). The LEDO/Emergency Director (ED) may activate DOCs supporting Environmental; Worker Safety & Health; Health Services; Facilities & Infrastructure (F&I); Public Affairs Office (PAO); Security Organization; and Site 300. The DOCs have internal plans and procedures for their specific emergency management support functions.

The Laboratory Director and/or designated executive staff gather to monitor the progress of the emergency and provide business continuity at the Executive Business Coordination Center (EBCC). A LEDO, if available, is assigned to the EBCC by the ED to serve as liaison with the EOC.

1.3.1 Comprehensive Emergency Management System

DOE requires all sites to implement a comprehensive emergency management system that considers and incorporates in its planning responses to a broad spectrum of hazards and possible consequences. The extent of emergency planning and preparedness for a particular LLNL building or facility corresponds to the type and amount of hazards and the potential effects on workers, the public, the environment and/or national security. The on-scene response and emergency management support described above comprise a portion of the overall integrated emergency management system at LLNL. The system is based on the LLNL commitment to Integrated Safety Management (ISM).

Integrated Safety Management, as described in the LLNL Program Description Document: Integrated Safety Management System and implemented as described in LLNL's *ES&H Manual*, Volume I, Part 2, Document 2.1, *General LLNL Worker ES&H Responsibilities*, is the first and primary level of defense against undesired and unexpected events. The Alameda County Fire Department (ACFD), ES&H Teams, Facilities Management, Health Services Department, and the Security Organization provide the second level, dealing with incidents that are mitigated and resolved primarily using onsite assets. If an incident should escalate beyond the capabilities of onsite assets, appropriate notification ensures that mutual aid can be invoked at the third level of defense through existing local, State, and Federal agreements.

This graded response is based on Integrated Safety Management, the *ES&H Manual*, and the LLNL EPlan. Internal and external reviewers routinely assess these defining documents against current standards. The emergency preparedness process is reviewed through self-assessment, LLNL assurance programs, annual exercises/drills, NNSA/LFO oversight, and NNSA/DOE Headquarters (HQ) review.

The comprehensive emergency management system at LLNL also supports local area emergency response and mutual aid. This system provides successful working relations, local awareness of LLNL as a community partner, implementation of the California Standardized Emergency Management System, and validation of LLNL's integrated response capability.

1.3.2 Technical Planning Basis

Technical planning underpins the concept of operations for LLNL's comprehensive emergency management system. This planning, prescribed by DOE Order 151.1C and associated Guides, includes both an Operational Emergency Base Program for all facilities, and a more robust Operational Emergency Hazardous Material Program for high hazard facilities. The Operational Emergency Base Program coordinates and integrates the emergency planning and preparedness requirements of applicable Federal, Tribal, State, and local laws, regulations, and ordinances, and other Orders and standards of performance. As warranted, the Base Program is expanded to implement additional emergency management requirements of an Operational Emergency Hazardous Material Program, if hazardous materials pose a major threat to the health and safety of workers and the public. The Hazards Survey and Emergency Planning Hazards Assessment

(EPA), if required, are the technical planning basis for the site's emergency management program. Although the elements comprising both the LLNL OE Base Program and the LLNL Hazardous Material Program are described throughout the LLNL Emergency Plan, the scope and purposes of each are described below.

1.3.2.1 Operational Emergency Base Program

Each DOE facility/site is required to establish an OE Base Program that provides the framework for response to serious or severe events that involve the health and safety of workers, the public, the environment, and safeguards and security. These events or conditions are not unique to DOE/NNSA operations.

The specific requirements that constitute the LLNL OE Base Program are the emergency planning and preparedness aspects of DOE Order 151.1C, as well as applicable laws, regulations, and ordinances.

The objective of the Base Program is to achieve an effective integration of emergency planning and preparedness requirements into an emergency management program that provides capabilities for comprehensive emergency management through communication, coordination, and an efficient and effective use of resources.

The LLNL *Hazards Survey*, which is based on an examination of the features and characteristics of all LLNL facilities, identifies the generic types of emergency events and conditions and the potential impacts, as well as key components of the OE Base Program. For facilities involved in producing, processing, handling, storing, or transporting hazardous materials that have the potential to pose a serious threat to workers, the public, or the environment, the *Hazards Survey* provides a hazardous material screening process for determining whether further analysis of the hazardous materials in an EPA is required. The thresholds at which further analysis is required are discussed in Section 1.3.2.2, Operational Emergency Hazardous Material Program. All areas and facilities not identified during this process to be part of the Hazardous Material Program are by default covered by the OE Base Program.

The elements of the Base Program at LLNL are represented and described in documents, plans, and procedures developed and maintained by individual disciplines of the ERO. Response elements are also described in the *LLNL Emergency Response Capability Baseline Needs Assessment* prepared by the LLNL Fire Marshal and reviewed by the LLNL Emergency Management Department Head. The required elements of the Base Program are dispersed among ERO discipline documents. This EPlan and associated EPIPs cover the elements of the LLNL Base Program administration. Implementation of the Base Program is accomplished through the following LLNL *ES&H Manual* Documents:

- 22.1 - *Emergency Preparedness and Response*
- 22.3 - *Response Plan for Fire in an Explosives Area*
- 22.4 - *Earthquakes*
- 22.5 - *Fire*

- 22.6 - *Exposure to Radiation in an Emergency*
- 22.7 - *Protective Actions: Disaster/Self-Help, Shelter-In-Place, Site Emergency Egress, and Emergency Traffic Control*
- 22.8 - *Continuity Programs*

The OE Base Program Administrator is identified in Section 12.1 of this EPlan.

Facility-Level Base Program

A subset of the OE Base Program at LLNL is the Facility-Level Base Program, which prepares facility occupants for basic emergency response. LLNL-MI-550791, *Implementation Guidance for the Facility-Level Base Program*, describes the preparation of Facility-Level Emergency Plans (FLEPs), the selection of Building Emergency Coordinators (BECs) and optional Floor Monitors, as well as OE Base Program training for BECs, Floor Monitors and building residents.

The Facility-Level Base Program is described in detail in *ES&H Manual* Document 22.1.

Facility-Level Emergency Plans

Emergency planning is required for all facilities/buildings covered by the OE Base Program. At LLNL, this planning is accomplished through the development of FLEPs that account for how the ERO normally responds to specific facilities/buildings at LLNL and describe how employees will respond to different types of emergencies, specific worksite layout, structural features, and emergency systems specific to each facility/building. Procedures are in place requiring each facility or complex to maintain a FLEP in writing. The FLEP must be kept in the workplace and be available to facility occupants for review. At a minimum, each plan includes procedures for reporting a fire or other emergency, exit routes and assembly locations, sheltering in place, emergency shutdown/operating critical plant operations before evacuation, accountability, and rescue or medical duties, if assigned. Each plan documents appointed BECs and optional Floor Monitors who have responsibility for overseeing the emergency preparedness and response activities in assigned facilities and for assisting facility occupants in understanding their responsibilities during a facility-level event.

1.3.2.2 Operational Emergency Hazardous Material Program

At certain thresholds, as prescribed by DOE Order 151.1C and associated Guides, hazardous materials identified in the Hazards Survey must undergo a further quantitative analysis through development of an EPHA.

For radiological classifications, DOE-STD-1027, Attachment 1, Table A.1 is used for differentiating between Nuclear Facilities and Radiological Facilities. Radiological materials exceeding the quantities listed on the table are screened in for quantitative assessments and documentation in a facility EPHA.

Chemicals must be quantitatively analyzed in the EPHA unless they may be excluded by one of four criteria:

- Common Public Use Exclusion
- Laboratory Scale Quantity Exclusion
- Low Dispersibility Exclusion
- Low Toxicity Exclusion

For biological classifications, facilities and/or operations with agents in type and quantity as described in DOE Order 151.1C, paragraph 4a (14) I, require an EPHA. Inventories of biological agents and toxins are assessed in accordance with the LLNL *ES&H Manual*, Document 13.1, *Biogovernance*, Document 13.6, *Safe Handling and Use of Biological Research Materials*, the LLNL Institutional Biosafety program, and the requirements of the Centers for Disease Control and Prevention's standard, *Biosafety in Microbiological and Biomedical Laboratories*.

All buildings/facilities and/or operations requiring a documented EPHA are included in the Hazardous Material Program. Additional information about the Hazards Survey and EPHA development process is found in Section 1.4.1.2 of this EPlan.

1.3.3 Severe Event Response

To prepare for severe events, LLNL has developed a Disaster/Self-Help Program Plan that describes how LLNL and the ERO will respond to a large-scale or regional severe event (e.g., earthquake) impacting LLNL when, for a significant period of time, there may be limited or no immediate response from ACFD or other professional emergency response organizations. Disaster/Self-Help is considered part of the LLNL OE Base Program because it covers all site facilities, regardless of whether significant hazards are impacted.

During a severe event such as an earthquake where LLNL and local offsite emergency response resources are overwhelmed, the LLNL EOC would transition to disaster mode operations. Per the LLNS contract with ACFD for fire services at LLNL, the primary LLNL funded ACFD resources at LLNL would be restricted to onsite LLNL responses until released by the LLNL EOC. The LLNL EOC Operations Section would be responsible for prioritizing responses and dispatching these resources. Under the strategic objectives established by the Emergency Director for the operational period, the Operations Section Chief will dispatch institutional resources (e.g., ACFD, Facilities, ES&H, etc.) using a prioritization approach used in California under the State's Standardized Emergency Management System.

The Laboratory's Disaster/Self-Help Program is overseen by the Emergency Management Department's Emergency Programs Organization (EPO) and also provides Laboratory personnel information on how to respond to large-scale emergency situations, as discussed in LLNL *ES&H Manual* Document 22.7. Boxes containing emergency supplies are maintained as part of this program and located at assembly points across the LLNL property (Sites 200 and 300). The "Self-help" portion of the program relies on employees to make an initial and continued effort to respond to and control emergencies (e.g., minor injuries, small fires, etc.) until professional emergency response personnel can take charge.

After a major severe earthquake event, any LLNL request for assistance from the local governmental emergency services would be responded to by them in accordance with the objectives in local and regional disaster plans. The City of Livermore's Comprehensive Emergency Management Plan documents the city's plans for disaster response, and includes references to mutual aid agreements with LLNL. The "San Francisco Bay Area Earthquake Readiness Response: Concept of Operations Plan" was developed by the U.S. Department of Homeland Security (DHS)/Federal Emergency Management Agency (FEMA) Region IX and the California Governor's Office of Emergency Services (Cal OES) to describe the joint State and Federal response to a catastrophic earthquake in the Bay Area. This plan is a component of the Concept of Operations for the joint State and Federal response to a catastrophic incident in California. Under this plan there are three response phases during the first 60 days after the earthquake. Activities occurring after the 60-day period are described as long-term recovery. The objectives for the three phases of response (immediate impact, sustained response, and relief) are summarized below.

Immediate Impact: Earthquake (E) to E+72 Hours

- Establish Interoperable Emergency Communications.
- Save Lives and Protect Public Safety.
- Provide Medical Care.
- Establish Lines of Supply and Transportation.

Sustained Response: E+72 Hours to E+14 Days

- Reestablish the Medical and Public Health Systems.
- Provide Care and Shelter for the Displaced Population.
- Reduce Hazards to the Population.
- Conduct Mass Fatality Operations.

Relief: E+14 Days to E+60 Days

- Provide Interim Housing for the Displaced Population.
- Restore Infrastructure and Public Services.
- Establish Temporary Transportation Capabilities.

1.3.4 Declaration of an OE

An OE may not require further classification, or it may be classified as an Alert, Site Area Emergency, or General Emergency by the EMDO when he/she determines that an unplanned, significant event poses a real or potential threat to safety, health, or the environment. Additionally, in a security event, the Security Duty Officer (SDO) is required to inform the EMDO or the LEDO that an OE should be declared based on Safeguards & Security and/or law

enforcement issues. See the EPlan, Section 5, for specifics on OE categorization and classification.

1.3.5 Reentry

The ED, Battalion Chief, and/or Security/IC will determine when an emergency scene is stable and reentry to specific buildings or areas can occur by non-First Responders. The appropriate ES&H Team provides technical evaluation support. See the EPlan, Section 8, for specifics on protective actions and reentry.

1.3.6 OE Termination and Recovery

The emergency will be terminated by the ED when the emergency condition is stabilized and with the input of the IC and, if activated, the Emergency Management Team (EMT) and offsite decision-makers. This concurrence assures there is no longer a threat to employee safety, the public, the environment, or national security. See the EPlan, Section 11, for emergency termination and recovery.

1.4 Site Description

1.4.1 Overview Including Function and Mission

LLNL is operated and managed by Lawrence Livermore National Security, LLC (LLNS). LLNS is a private corporation composed of the University of California, Bechtel National, the Babcock & Wilcox Company, the Washington Division of URS Corporation, and Battelle.

LLNL is a premier research and development institution for science and technology applied to national security. It is responsible for ensuring that the nation's nuclear weapons remain safe, secure, and reliable. LLNL also applies its expertise to prevent the spread and use of weapons of mass destruction and strengthen homeland security.

LLNL's national security mission requires special multidisciplinary capabilities that are also used to pursue programs in advanced defense technologies, energy, environment, biosciences, and basic science to meet important national needs. These activities enhance the competencies needed for LLNL's defining national security mission.

The Laboratory serves as a resource to the U.S. government and is a partner with industry and academia. Safe, secure, and efficient operations and scientific and technical excellence in its programs are necessary to sustain public trust in the Laboratory.

The Laboratory staff consists of approximately 5,200 Career Laboratory employees as of December 1, 2013. Flex term, Post-Doc, Non-Career, and Supplemental Labor bring the Laboratory population to around 6,400.

LLNL is comprised of two non-contiguous sites – Site 200 (Livermore site) and Site 300. The Livermore site is located on a one-square-mile site in Livermore, CA (Site 200). A larger (10

square mile) remote explosives/experimental testing site (Site 300) is situated 18 miles to the east with an approximate population of 200.

Infrastructure Overview

Site 200: (approximate figures – 3rd Quarter 2013)

- 498 Facilities
 - 190 Buildings
 - 85 Modulares
 - 90 Trailers
 - 31 Tents
 - 59 Other structures
 - 43 Infrastructure (roads, sewer, etc.)
- ≈6.7 million square feet

Site 300: (approximate figures – 3rd Quarter 2013)

- 216 Facilities
 - 90 Buildings
 - 25 Modulares
 - 5 Trailers
 - 67 Other structures
 - 29 Infrastructure (roads, sewer, etc.)
- ≈400,000 square feet

1.4.1.1 Detailed Facility Descriptions

Site 200

Site 200 has eleven facilities (see Figure 1.1) as determined by EPHAs that could experience events causing the declaration of an Operational Emergency based on the nature of the hazardous materials (HazMat) present. The areas/facilities that have the potential to cause declaration of an Operational Emergency are:

1. **Area 625** contains Waste Storage Facilities that are designed and operated for the purpose of safely handling, storing, and treating hazardous waste, transuranic (TRU) waste, low-level waste (LLW), mixed waste, combined waste, nonhazardous industrial waste, and conditionally accept waste generated at LLNL (as well as small amounts from other DOE facilities). Area 625 is a storage yard that is typically unoccupied.
2. **Building 131** provides engineering support for Laboratory-wide programmatic tasks. B131 is an integrated office and research facility currently occupied by approximately 500 individuals from the Engineering Directorate, including 15 resident workers in the High Bay. The type of engineering support can range from essentially paperwork (design and evaluation of engineered systems) to hands-on fabrication, installation, and/or testing of parts and

systems. The B131 High Bay provides work environments for experiments and operations in engineering evaluations.

3. The **Building 231 Complex** is managed by the Facilities Management Department for the Engineering Directorate. B231 Complex operations include shipping, receiving, inspecting, weighing, packing, repacking, and storage of controlled materials, as well as onsite transportation of those materials. Only the Building 231 Vault (B231V), Other Structure 232 Fenced Area (OS232FA), and Building 233 Garage Vault (B233GV) portions of the B231 Complex have the potential to cause Operational Emergencies. A maximum of 25 employees may be located in B231V, OS232FA, and B233GV.
4. The **Radiography Facility** (Building 239) is managed by the Weapons and Complex Integration (WCI) Principal Directorate. B239 provides a state-of-the-art facility for radiography consistent with its Hazard Category 3 Nuclear Facility designation. Although it is typically unoccupied, 10 to 15 employees may occupy B239 during operations.
5. **Building 321C** is used for the fabrication of parts and assemblies to meet the needs of LLNL programs. A maximum of 51 employees may occupy B321C during normal operations.
6. **Building 322** is used to finish metal surfaces with a wide variety of protective and functional surface coatings via metal plating. Although only one person maintains an office in the facility, a maximum of 10 employees may occupy B322 during normal operations.
7. The **Tritium Facility** (Building 331) provides for tritium and actinide research and development (R&D) consistent with its Hazard Category 3 Nuclear Facility designation. Major study areas supported include: tritium materials handling systems R&D, tritium target fills, tritium recycle and shipping, actinide and tritium decontamination, waste packaging and assay, and actinide analytical chemistry. A maximum of 35 employees may occupy B331 during normal operations.
8. The **Plutonium Facility** (Building 332) is a Hazard Category 2 Nuclear Facility used to support the nuclear weapons program through research in the physical, metallurgical, and chemical properties of plutonium, including aging, dismantlement, and disposition in support of stockpile stewardship, as well as fabrication, testing, and assembly of plutonium device parts in support of the LLNL's Nuclear Testing Program, and to serve as LLNL's central storage vault for special nuclear materials. A maximum of 48 employees may occupy B332 during normal operations.
9. **Building 334** is a Hazard Category 2 Nuclear Facility used to perform radiation measurements and engineering tests of radioactive materials in various configurations. The facility is managed by the Nuclear Materials Technology Program, under the auspices of the

WCI. Although only one person has a permanent office in the building, 10 to 15 employees may occupy B334 during normal operations.

10. **Buildings 365, 368, and 255** are used to develop scientific tools to identify and understand the pathogens of medical, environmental, and forensic importance. This information is used to develop, demonstrate, and deliver technologies and systems to improve domestic defense and/or medical capabilities and, ultimately, to save lives in the event of a biological attack in support of our national security's nonproliferation mission. These buildings are unoccupied except during operations. Four to six employees may occupy these buildings during normal operations.
11. The **Decontamination and Waste Treatment Facility** (DWTF) Complex contains Hazard Category 2 Nuclear Facilities used to safely handle, store, prepare for shipment, and/or treat hazardous waste, TRU waste, LLW, mixed waste, combined waste, nonhazardous industrial waste, and conditionally accepted waste generated at LLNL (as well as small amounts from other DOE facilities). A maximum of 60 employees may occupy DWTF during normal operations.

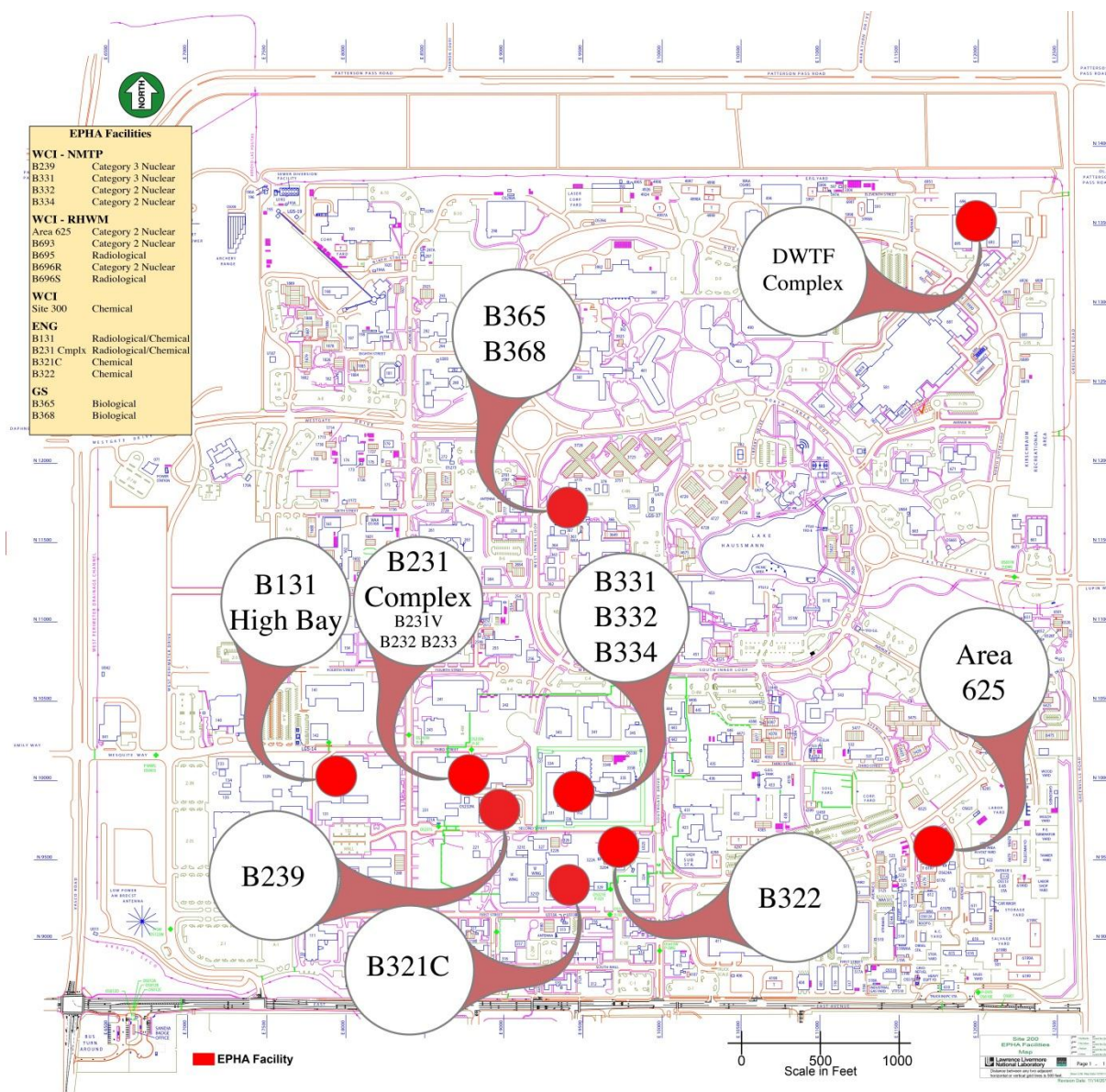


Figure 1.1 Site 200 Hazardous Facilities
Note: Hazardous material facilities are colored red.

Site 300

Site 300 (see Figure 1.2) conducts tests associated with the non-nuclear explosive component of a nuclear weapon. The site covers 6893 acres, and has 216 buildings. There are approximately 110 employees (Laboratory and subcontractor) that report to Site 300 as their assigned work location. Some facilities at Site 300 store hazardous materials of sufficient quantity that could cause declaration of an Operational Emergency if an accident occurred. However, while there are various locations where hazardous material accidents could occur, the entire site is treated as a single hazardous facility during the hazards assessment process. Several administrative and

service buildings and most non-programmatic functions are generally consolidated near the entrance to Site 300 in the General Services Area. Non-destructive testing is conducted in the Physical, Environmental and Dynamic Test Area to the northeast. The area where high explosives are synthesized, formulated, fabricated and test devices are assembled is to the north in the Process and Chemistry Areas. Firing activities (both indoor and outdoor) take place further north in the East and West Firing Areas. The separation of the firing areas from the Process and Chemistry Areas and the General Services Area illustrates land-use compatibility considerations in site selections. The firing bunkers, where high explosives and other weapon components are detonated on open firing tables and within the Contained Firing Facility, are separated from each other and well away from the boundaries of the site. Scattered throughout the site are earth-covered magazines for storage of high explosives, waste collection and treatment areas, and numerous storage buildings.

While non-programmatic functions have been generally consolidated in the General Services Area, certain facilities such as power substations, the meteorological and radio towers, drinking water system storage tanks, and the Protective Forces Division's office and communications facility are located strategically elsewhere for their special support functions.

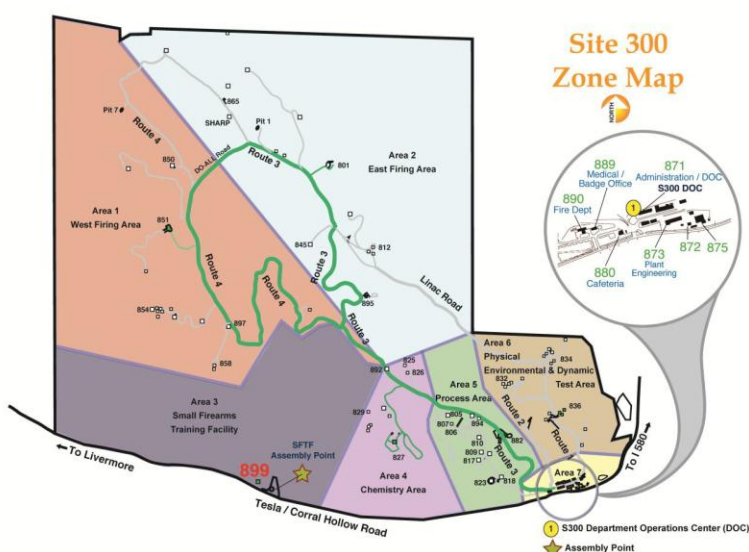


Figure 1.2 Site 300

1.4.1.2 Hazards Survey and Hazards Assessment

The actual and authorized hazardous material inventories of the Livermore Site 200 and Site 300 facilities are compared with the evaluation criteria screening thresholds from DOE Guide 151.1-2, *Technical Planning Basis*, to determine the need for further quantitative assessment. Facilities with an inventory of a particular hazardous material in excess of criteria-based values require further evaluation and documentation in the form of a facility-specific EPHA. The EPHAs are updated periodically (every three years) or whenever there are significant changes to operations

(e.g., new operations not previously considered or new hazardous material inventories). The EPHAs describe facility mission, location, floor plans, utilities, safety systems, worker populations, and operations.

The processes used to screen hazardous materials are described in detail in the *Hazards Survey*. The LLNL *Hazards Survey* is developed in accordance with EPIP-61, *Emergency Planning Hazards Survey*. Most of the facilities listed in the *Hazards Survey* do not require a facility-specific quantitative EPHA. Hazards existing at LLNL include small amounts of chemical hazards such as hydrogen chloride, chlorine, and sodium hydroxide. Radiological hazards include plutonium, uranium, tritium and transuranic wastes. The results of this evaluation survey are summarized in Table HS-1 of the current version of the *Hazards Survey*. The latest *Emergency Readiness Assurance Plan* (ERAP) contains annually updated information on the *Hazards Survey*, EPHAs, and tabulated information related to significant radiological, chemical, and biological hazards authorized in LLNL buildings and facilities.

Based on hazardous material inventory information, facilities are categorized in the OE Hazardous Material Program, and require facility-specific quantitative assessments with associated documentation (the EPHA). To ensure that hazardous materials posing plume-release impacts are adequately considered, those hazardous materials inventories potentially producing Alert, Site Area Emergency, or General Emergency classifications will be evaluated generically in the North American Emergency Response Guidebook (current version) per EPIP-62, *Emergency Planning Hazards Assessment Documentation for Transportation Events*, and/or in a facility EPHA as required per EPIP-63, *Emergency Planning Hazards Assessment*. Of the approximately 714 facilities at LLNL, there are just 11 facilities that, by the nature of the hazardous materials present, could experience events causing an OE to be declared as described in detail in their respective EPHA documents. Additionally, there is an EPHA for Site 300.

There are offsite (non-DOE) facilities identified in the EPHAs that might negatively impact the Livermore Site 200 by the release of hazardous chemicals such as chlorine gas and ammonia gas. There are no such facilities identified in the Site 300 vicinity. The Sandia National Laboratories/California (SNL/CA) site (located directly south of LLNL) is covered by its emergency management program.

Commercial and other vehicles unrelated to LLNL operations can transport hazardous materials on roads adjacent to the Livermore site and on Corral Hollow road south of Site 300. However, the main thoroughfare is Interstate 580, which is approximately one mile north of both the Livermore site and the northern boundary of Site 300. A railroad runs approximately one-quarter mile north of the Livermore site and one-and-a-half miles north of the northern boundary of Site 300. The manager of train operations reports that train engineers for Union Pacific Railroad always carry a manifest as well as emergency action plans dealing with the particular contents of a given train. Release of toxic materials from vehicles or trains could negatively impact either site. Grass fires originating offsite could impact Site 300 outer boundaries. The combination of gravel, asphalt, and concrete as roadway, work area, and building construction materials, along

with onsite controlled burns, would limit combustible materials available to burn and expose onsite personnel and materials to such fires.

1.4.1.3 Leased Facilities

Emergency management planning and response for leased facilities at LLNL falls under the site's Operational Emergency Base Program. A number of leased facilities are located within the eastern edge of the LLNL site bordering Greenville Road in an open, unclassified research and development space called the Livermore Valley Open Campus (LVOC). The LVOC houses conference space and collaboration facilities that connect industry with LLNL and SNL/CA partners. The LVOC is modeled after research and development campuses found at major industrial research parks and other DOE national laboratories with campus-like security, a set of business and operating rules devised to enhance and accelerate international scientific collaboration and partnerships with U.S. government agencies, industry and academia.

1.4.2 Physical Attributes of the Sites

1.4.2.1 Geography

LLNL consists of two sites, the main Laboratory site located in Livermore, California (Site 200) in Alameda County, and the Experimental Test Site (Site 300) located near Tracy, California, on the border between San Joaquin and Alameda counties (see Figure 1.3).

The Livermore site is located approximately forty miles east of San Francisco in the Livermore valley in southern Alameda County, State of California. The downtown area of the City of Livermore lies about three miles to the west of the Livermore site. In addition to Livermore, notable urban areas to the west of LLNL are the cities of Pleasanton, Dublin, Danville, and San Ramon, and the densely-populated San Francisco Bay Area.

Urban areas lying in the general northerly direction from the Livermore site are the cities of Concord, Walnut Creek, Pittsburg, and Antioch; while Tracy, Manteca, Stockton, and Modesto are to the east. To the southwest lie the densely-populated cities of Santa Clara County, which includes San Jose.

Site 300 covers 30.3 square kilometers (11.7 square miles or roughly 7,000 acres) and is located 18 miles southeast of the Livermore site (Site 200), approximately 10.5 kilometers (6.5 miles) southwest of downtown Tracy, California.

1.4.2.2 Topography and Geology

The Livermore site, which is roughly one square mile, is located in the southeastern part of the Livermore valley within the eastern boundary of the City of Livermore. The valley is situated in a section of the California coast range that lies between San Francisco Bay on the west and the northern San Joaquin valley to the east. The Livermore valley is primarily of low relief, although it does contain scattered groups of hills that rise from 300 to 600 meters above the valley floor.

Site 300 is located in the southeastern Altamont Hills of the Diablo range. The topography of Site 300 consists of a series of steep hills and canyons generally oriented northwest to southeast.

The site is underlain by gently dipping sedimentary bedrock dissected by steep ravines. The bedrock consists of interbedded conglomerates, sandstones, siltstones, and claystones. The bedrock within Site 300 has been slightly deformed into several gentle, low-amplitude folds. The locations and characteristics of these folds, in combination with the regional fault and fracture patterns, locally influence groundwater flow within the site.

Although LLNL's Site 200 and Site 300 are somewhat removed from the largest and most active earthquake faults in California, both sites are located close to lesser active and potentially active faults. The most important of these are the Calaveras and Greenville faults, which are the easternmost members of the San Andreas Fault system in the San Francisco Bay region. The Carnegie-Corral Hollow Fault system passes through Site 300 and 3 km east of the Livermore Site 200. Additional information regarding earthquake potential is discussed in Section 1.4.2.5 below.

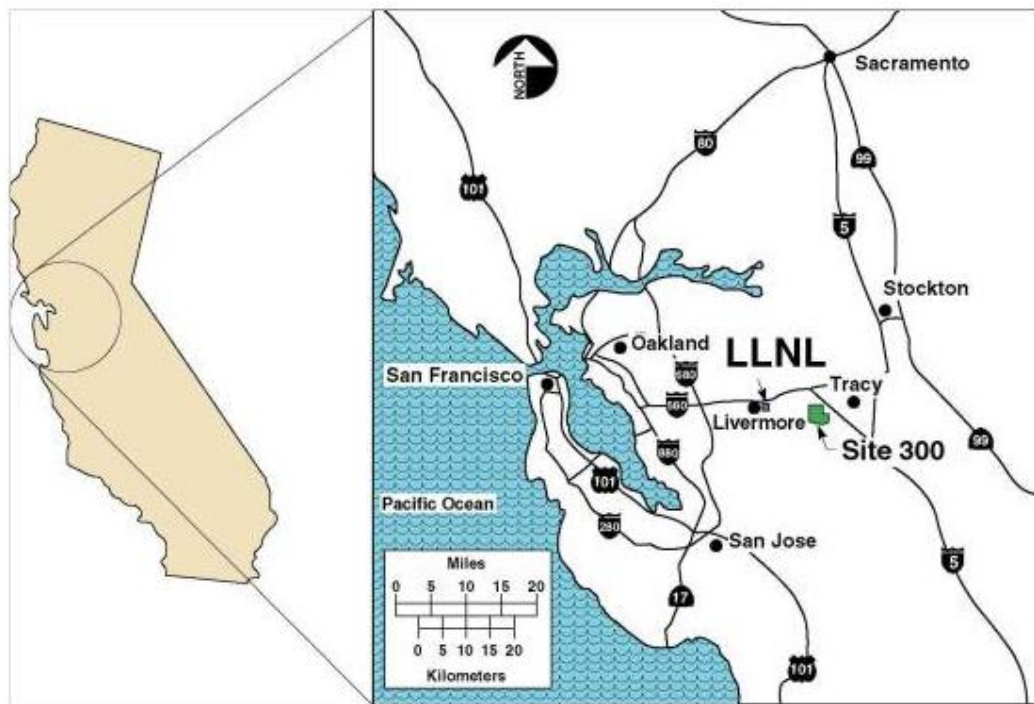


Figure 1.3 Local Area

1.4.2.3 Population Distribution

Following are population density data for areas within the LLNL's Sites 200 and 300 Emergency Planning Zones (EPZs), gathered from the U.S. Census Bureau and based on 2010 survey information:

- Alameda County, CA, 1.5 million; 2,000 people per square mile
- San Joaquin County, CA, 685,000; 493 people per square mile
- Livermore, CA, population 81,000; 3,200 people per square mile.
- Tracy, CA, population 83,000; 3,745 people per square mile

1.4.2.4 Meteorology

The average wind speed in 2011 at the Livermore Site 200 was 2.3 m/s (5.2 mph); at Site 300 it was 5.6 m/s (12.5 mph), based on data from the LLNL Environmental Report for 2011, Table 1-1, dated August 29, 2012.

1.4.2.5 Natural Phenomena

Tornadoes / High Winds

Tornadoes and high winds are not major concerns for emergency planners at LLNL because they are rare events and historically have not caused significant damage in Alameda or San Joaquin County. Since 1950, only three tornadoes have been recorded in Alameda County, CA, according to the National Oceanic and Atmospheric Administration's National Climatic Data Center Storm Events Database, all of which were rated as F0 tornadoes on the Fujita Scale. In San Joaquin County, where Site 300 is located, 18 tornadoes have been recorded since 1950, fourteen of which were F0, two of which were F1, and two of which had an unknown ranking on the Fujita Scale. The Fujita Scale (F-Scale), or Fujita-Pearson Scale, is a scale for rating tornado intensity, based primarily on the damage tornadoes inflict on human-built structures and vegetation, where F0 represents light damage, F1 moderate damage, F2 considerable damage, F3 severe damage, F4 devastating damage, and F5 incredible damage.

Earthquakes

A major earthquake is a credible disaster caused by a natural phenomenon that is likely to involve the entire Laboratory and the entire surrounding community. Hazard mitigation at LLNL is achieved by complying with building codes, applying good engineering and housekeeping practices, and providing training programs required for managers and workers. LLNL's approach to responding to a severe event is discussed in Section 1.3.3 of this EPlan.

The earthquake faults of greatest threat to LLNL's Site 200 and Site 300 are the Calaveras and Greenville faults, which are both estimated to be capable of producing earthquakes in the magnitude 6.5 to 7 range (i.e., similar to the size of the 1989 Loma Prieta earthquake). These two

faults make the greatest contribution to the seismic hazard at Livermore Site 200, particularly at frequencies of ground shaking of about 1 Hz and above that would be the most damaging to buildings at the sites. For example, a magnitude 5.8 earthquake (followed by a magnitude 5.4 aftershock) on the Greenville Fault in 1980 produced high frequency shaking having an estimated peak acceleration of about 0.3g (g is the acceleration due to gravity) and some instances of significant structural damage at the Livermore Site 200. Comparable high frequency shaking would not be experienced from earthquakes on larger faults of the San Andreas system (i.e., San Andreas, Hayward-Rogers Creek, San Gregorio). Rather, these faults would produce relatively large low-frequency ground motions of longer duration. For example, the 1989 magnitude 7 Loma Prieta earthquake on the San Andreas Fault produced a peak ground acceleration of 0.1g at the Livermore Site 200, but caused no damage.

The Carnegie-Corral Hollow Fault system passes through Site 300 and 3 km east of the Livermore Site 200. Field investigations by LLNL Geosciences in 1991 suggested that the Carnegie-Corral Hollow Fault should be considered potentially active, in which case it makes significant contributions to the hazard at both sites. Apparently, less active and/or shorter faults that make lesser contributions to the overall hazard include the Las Positas and Verona-Williams faults, and the recently discovered Mount Diablo thrust fault under the Livermore and Sycamore Valleys.

Historical records indicate that about once every 20 years the Livermore Site 200 is subject to an earthquake that can at least knock books off shelves, overturn furniture, cause lighting fixtures to fall, and the like. No active faults are known to underlie Site 200, and there is no historical record of surface rupturing or faulting at the site. Flooding resulting from seismic events would not occur at LLNL from a failure of the Del Valle Reservoir dam, from loss of water from the Patterson Reservoir, or from a break in the South Bay Aqueduct near LLNL.

Wildland Fires

Wildland fires are a concern at LLNL. Historically, wildland fires have not been a threat at the Livermore site. However, wildland fires are a significant concern at Site 300. Precautions are taken to reduce the potential for a wildland fire spreading at Site 300 by reducing/controlling the growth of vegetation within a buffer area inside the perimeter fence. Wildland fire control at Site 300 is also mitigated aggressively by the annual prescribed burn. The prescribed burn confines a potential fire to the property boundaries of Site 300, eliminates the fuel in high fire probability areas (high explosive test areas), and generally breaks the fuel path, thereby limiting the size of potential fires in other areas. The Fire Department has been successfully conducting prescribed burns at Site 300 for over 45 years. Three documents describe and regulate the prescribed burns, the *Prescribed Burning/Smoke Management Plan, Site 300 Explosive Test Facility Prescribed Burn/Smoke Management Plan* and EMD Procedure 1606, *Tactical Plan - Command Procedures: Controlled Burns at Site 300*. Because of the prescribed burn process, firefighters assigned to Station 21 at Site 300 are well trained and experienced with “back-fire” techniques

and use that technique extensively as a fire control measure when responding to wildland fires at Site 300.

Staffing at Station 21 allows a standard two-flank attack. LLNL firefighters have a history of aggressive wildland fire attack at Site 300 and control most fires with the initial response. As with all fire incidents, additional equipment is dispatched from the Livermore site, but with an extended arrival time. Wildland fires beyond the capabilities of the initial fire attack are usually held in check by the prescribed burn boundaries, but LLNL's Mutual Threat Zone Memorandum of Understanding (MOU) with California Division of Forestry allows for specialized resources such as firefighting helicopters and tankers in addition to normal wildland mutual aid.

Flooding

According to *ES&H Manual* Document 22.4, *Earthquakes*, flooding would not occur at LLNL from a failure of the Del Valle Reservoir dam, from loss of water from the Patterson Reservoir, or from a break in the South Bay Aqueduct near LLNL. However, flooding is still a possibility at LLNL due to storms. According to a recent U.S. Geological Survey (USGS) report, scientists believe a megastorm occurs in California once every 165 to 400 years. Called "ARkStorms" by the USGS, these megastorms are caused by a long band of sub-tropical moisture known as the "pineapple express" that sometimes stretches across the Pacific Ocean to the California Coast. ARkStorm stands for A(tmospheric)R(iver)k(1,000) Storm," where the k, representing the number 1,000, is an indicator of storm size. The last large ARkStorm to hit California occurred in December 1861 and lasted through January 1862, turning the Sacramento Valley into an inland sea and causing the state capitol to be moved temporarily to San Francisco. Geologic studies of deposits offshore of California's big rivers suggest that storms even bigger than 1861-62 have happened six times in the last 1800 years. Smaller ARkStorms caused significant damage in northern California in 1986 and 1997. The USGS predicts that the next large ARkStorm to hit California will cause more damage than even a big earthquake on the San Andreas Fault. To help prepare for response to flooding events, LLNL participates in the ARkStorm flooding exercises conducted by the State of California's Office of Emergency Management.

1.4.2.6 Transportation System

Public Transportation: Public transportation is available in the Livermore, CA area, including bus services in some areas of Alameda County, and an extensive rail infrastructure that provides a mix of services exists within the nine Bay Area counties. **Bay Area Rapid Transit**, commonly known as BART, provides commuter rail service to Contra Costa County, Alameda County, and San Mateo County. An expansion that is currently under construction will build an additional BART station in Alameda County by 2016. The **Amtrak** Thruway Bus Route 34 goes from Stockton to San Francisco through Livermore, with stops in Tracy, Livermore, and Dublin/Pleasanton.

Highways: Due to the large volume of vehicle traffic, highway systems in the area are robust. The following interstate highways handle large volumes of vehicle traffic daily, but if interstates are clogged alternate routes are available:

- Interstate highway 580 crosses the San Pablo Bay over the Richmond-San Rafael Bridge, goes through Richmond as the John T. Knox Freeway, passes through Oakland as the MacArthur Freeway, then continues to Livermore, through the Altamont Pass to Tracy, where it intersects with Interstate 5, thus providing a link with Southern California.
- Two interstate highways travel up the East Bay from San Jose. They are Interstate 880, which runs close to the bay to Oakland, and Interstate 680, which stretches inland from San Jose north through Fremont, Pleasanton and Concord.

Railways: Union Pacific (UP) Railroad operates freight lines through the Altamont Pass, Livermore, Pleasanton, and Niles Canyon. The Altamont Commuter Express also runs on UP lines between Stockton and San Jose, with three west-bound trains running in the morning, and three east-bound trains in the afternoon, including a stop on Vasco Road near Site 200.

1.4.2.7 Utility Systems

Electrical Utilities

Site 200 is served by both Pacific Gas & Electric (PG&E) and the Western Area Power Administration (WAPA) via two (2) 115kV electrical overhead transmission lines. The PG&E line enters the site at the site's southeast corner, runs along Greenville Road, then turns west to a Substation. The WAPA line enters the site at the northeast corner, and runs parallel with Outer Loop Road to a Substation. The LLNL electrical distribution system provides normal power through a dual loop underground electrical distribution system with manual cross-connect capability.

Site 300 is served by PG&E at 115kV through a radial transmission line. There is no alternate transmission source. There are two main-power 115/12kV Substations connected to the transmission line.

LLNL has adequate normal and backup generator capacity and sufficient uninterrupted power supply (UPS) systems or battery sources to provide continuous power during generator start and loading operations. LLNL generators are in a state of readiness via their auto-start capabilities, fuel supply tanks are filled to a level for a minimum of eight hours of operation, and a periodic fuel analysis program is in place. LLNS has prepared for long-term generator operations via a contracted supplier with multiple fuel sources, large bulk storage tanks on site, and two LLNS operated fuel distribution trucks.

LLNL also has adequate backup power sources to power the EOC, Alameda County Regional Emergency Communications Center (ACRECC), and other emergency facilities and essential emergency response equipment. Fixed diesel generators provide backup power to essential

equipment during a loss of normal power. UPS systems or batteries provide continuous power to important equipment while generators start and provide backup power for designated loads, and typically will power equipment for at least 30 minutes. ACRECC is equipped with three fixed optional generators, UPS systems, and batteries.

Mechanical Utilities:

Mechanical Utilities at LLNL is responsible for sitewide delivery of the following utilities:

- City Water (CW)
- Sanitary Sewer (SS)
- Natural Gas (HPG)
- Compressed Air (CA)
- Low Conductivity Water (LCW)
- Demineralized Water (DW)

Site 200 Water Supply: Since 1960, the main water supply for LLNL has been purchased from the City of San Francisco Hetch Hetchy Aqueduct system via the Mocho Shaft located six miles south of LLNL. This domestic water is delivered to LLNL under gravity flow from three water storage tanks located on SNL/CA property. The Sandia water storage tank capacity is 1.5 million gallons. If Hetch Hetchy water quality or quantity becomes a problem, a backup water resource exists. A LLNL contract with the Alameda County Flood and Water Conservation District, Zone 7, supplies water through the California Water Service Company. During emergencies, water is pumped into the LLNL distribution grid at a pumping station at LLNL's north boundary. In addition, the site has an emergency storage reservoir onsite from which water could be pumped directly into the distribution grid if necessary. The flow rate to depletion of the site's water supply is 8,900 gpm for five hours, or 7,476 gpm for seven hours.

Site 300 Water Supply: A number of wells and storage tanks are located across Site 300. These storage tanks range in capacity from 63,000 to 165,000 gallons. An additional connection to the Hetch Hetchy aqueduct via the Thomas Shaft south of the site adds reliability and capacity to improve the Site 300 water supply.

Site 200 Natural Gas Supply: Purchased from PG&E, natural gas is supplied from the main meter station at southern South Gate Drive and is distributed at 8 psig via an underground grid system.

Details on the geography, topography, demography, meteorology, natural phenomena, transportation systems, and utilities can be found in the Environmental Impact Statement/Environmental Impact Report for the Livermore site, the *Environmental Report (current version)* or the safety analysis reports.

2 EMERGENCY RESPONSE ORGANIZATION

2.1 LLNL Organization Structure

Lawrence Livermore National Security, LLC operates LLNL for the DOE/NNSA under Contract DE-AC52-07NA27344 (Contract 44) between LLNS and DOE. The LLNL organization chart applicable to the EPlan is shown on Figure 2.1.

2.1.1 Emergency Programs Responsibilities

The Laboratory Director, who reports to the LLNS Board of Governors, is responsible for the safe operation of LLNL. The Director has the authority and responsibility to ensure the Laboratory complies with applicable DOE Orders, as well as other Federal, State, and local regulations.

The Director has delegated responsibility for operational activities, including emergency management, to the Deputy Director. The Facilities & Infrastructure (F&I) Associate Director is responsible for management oversight of LLNL's facility operations programs and integration with other F&I activities, including emergency management.

The Department Head for the Emergency Management Department (EMD) is responsible for the direction of LLNL's comprehensive emergency management and response program and serves as the Emergency Management Program Administrator under DOE Order 151.1C. The Department Head is also the Functional Area Manager (FAM) for the Emergency Management (EM) Functional Area (FA) at LLNL. Under LLNL's management system, the FAM is responsible for assessing and measuring the effectiveness of functional processes - in this case, emergency management - throughout the Laboratory.

When decisions related to the EM FA will have a significant or broad impact on other FAs or the Laboratory at large, the FAM is responsible for presenting the proposed changes to the Operations & Business PAD's Operations Review Board (ORB), and then to the Institutional Operations Review Board (IORB). The IORB, which is represented by all key programs at LLNL, then facilitates the negotiation and decision-making process for approving policy implementation while balancing institutional risk.

The Emergency Programs Organization (EPO) Manager, reporting to the Emergency Management Department Head, is responsible for the daily activities of the LLNL Emergency Programs Organization, including administration of programmatic activities necessary for LLNL to comply with DOE Order 151.1C.

The EPO Facilities and Equipment Specialist is responsible for the readiness and maintenance of the EOC and other special projects as assigned by the EPO Manager.

The EPO Performance Assurance Specialist is responsible for assessment coordination, commitment tracking and coordination, internal assessment, and the *Emergency Readiness Assurance Plan*. Additional responsibilities include maintaining, reviewing, and updating the EPlan and EPIPs.

The EPO Training, Drills and Exercise Specialists are responsible for ERO training, records coordination, exercise and drill development and execution, drill/exercise conduct, and drill/exercise corrective action coordination with the Performance Assurance Specialist.

The EPO Disaster/Self-Help Program Manager provides direction to and oversight of the LLNL Disaster/Self-Help Program, including development and updates of applicable training and resources. This includes providing guidance and assistance to directorate Disaster/Self-Help Coordinators with evacuation and shelter-in-place plan development, personnel training, and coordination of LLNL resources.

The EPO Consequence Assessment Analyst utilizes hazards surveys to conduct assessments.

The EPO Offsite Liaison is responsible for interface and coordination between LLNL and local, county, State and Federal offsite agencies in the area of emergency planning, preparedness and response.

The EMD Subject Matter Expert (SME) for LLNL's Comprehensive Emergency Management System reports to the Emergency Management Department Head, and assists him/her and the EPO Manager in meeting institutional and regulatory requirements associated with development, management, implementation, and maintenance of LLNL's Comprehensive Emergency Management System. The SME also provides the EPO Manager with ongoing oversight assessment of LLNL's Comprehensive Emergency Management System, with a focus on the effective integration of the various emergency management program elements and response organizations (e.g., ES&H Teams, Fire Department, Protective Forces, etc.). The EMD SME also serves as the alternate EM FAM.

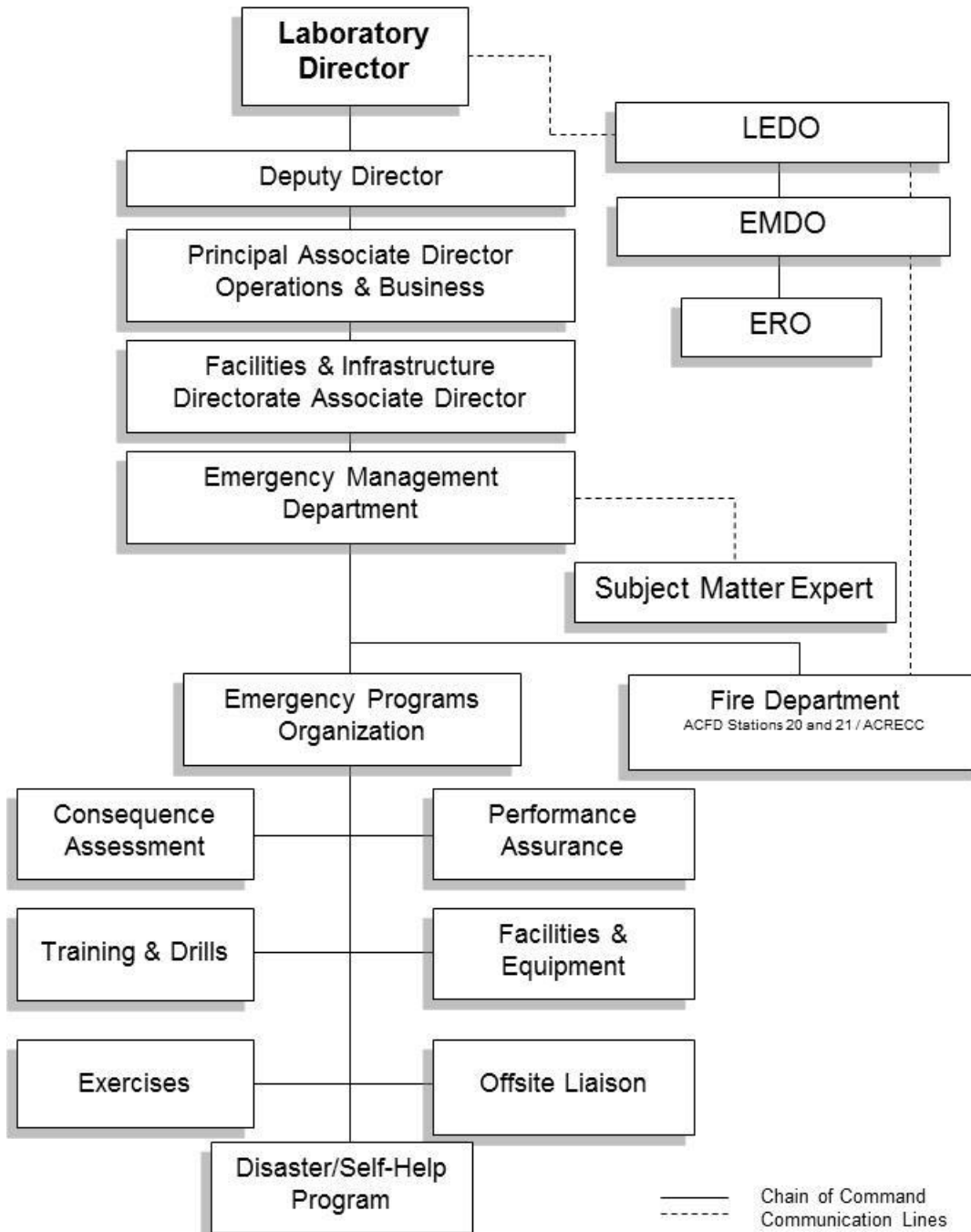


Figure 2.1 LLNL Organization

2.1.2 Committees

2.1.2.1 Emergency Programs Exercise Planning Committee

The Emergency Programs Exercise Planning Committee (EPEPC), managed by EPO, is composed of representatives from participating or interested onsite entities (e.g., Fire Department, Security Organization, ES&H, affected facilities), and offsite community partner organizations that have indicated an interest in drill and exercise planning. The EPEPC aids in the scheduling and planning of exercises and drills. The EPEPC meets on a quarterly basis throughout the planning cycles and implements EPIP-131, *Drills & Exercises*.

2.1.2.2 Emergency Management Stakeholder Advisory Group

The Emergency Management Functional Area Manager (EMD Head) has established, in accordance with LLNL management policy, a standing Stakeholder Advisory Group (SAG) associated with the EM FA. The EM SAG is intended to facilitate collaboration among the LLNL programs and support organizations regarding cross-organizational matters for this functional area. The EM SAG addresses institutional requirements flow down into implementing procedures, upcoming contract changes involving new or revised requirements, implementing policies and procedures, cross-cutting implementation issues, performance monitoring, and recommended program and process improvements. The EM SAG and other LLNL Functional Area SAGs serve to integrate functional area requirements and processes across the Laboratory for consistent and effective implementation.

2.2 Emergency Direction and Control

The LLNL Director has delegated to the LEDO the authority to protect the health and safety of LLNL employees, the public, and the environment; and to maintain the security of the facility during an emergency. LEDOs are senior Laboratory managers who have been appointed in writing by the Director and have accepted responsibility for managing institutional response. They will assume the role of ED when the EOC is declared operational.

The LLNL ERO consists of a two-tiered organization, structured to respond to emergencies (see Figure 2.2). Emergency Management Teams at each level provide command and control of the emergency response efforts. The IC is in charge at the scene, and the ED is in charge of the overall site-wide response efforts. The EMDO is onsite or on-call at all times, and is responsible for categorizing OEs and further classifying OEs as Alerts, Site Area Emergencies, or General Emergencies, if required.

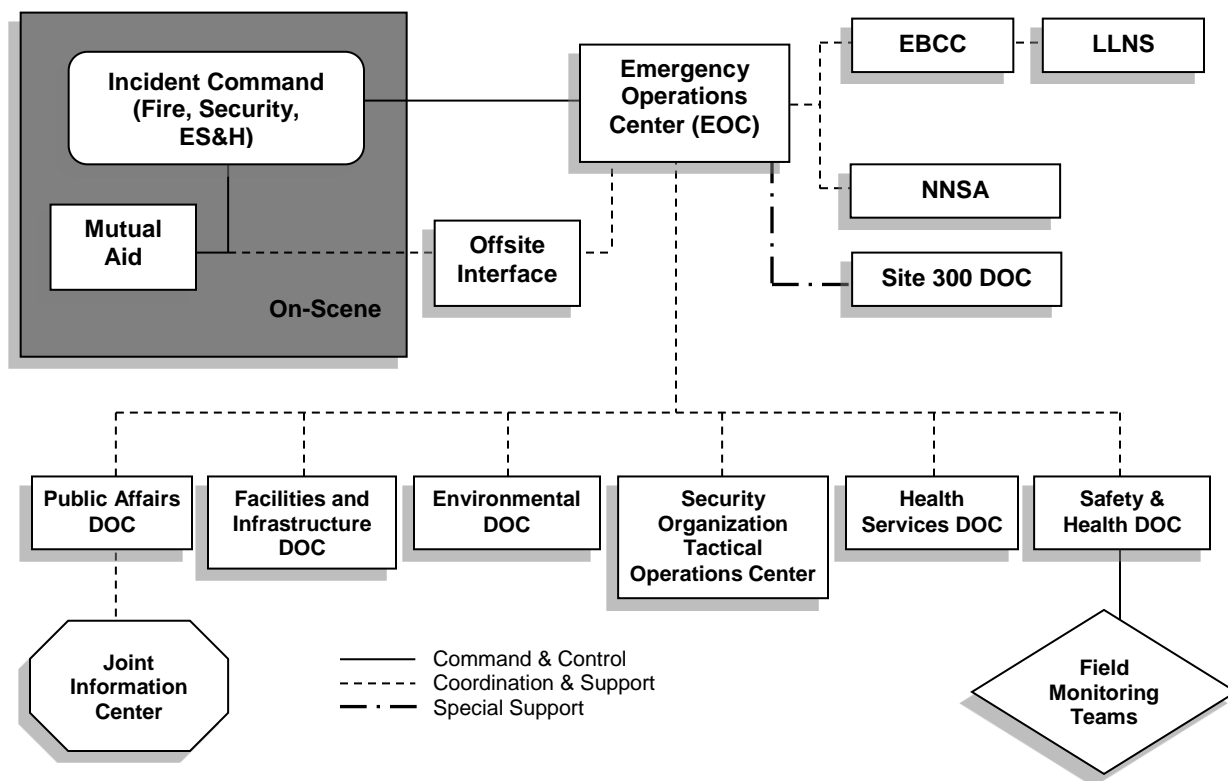


Figure 2.2 LLNL Emergency Response Organization

2.2.1 Succession of Authority

When an event requires activation and operation of the EOC, the on-duty LEDO becomes the ED and the back-up LEDO becomes the Liaison Officer. If the on-duty LEDO does not arrive for duty in a timely manner, an attempt should be made immediately by emergency management personnel in the EOC to contact the on-duty LEDO. After initial attempts to contact the on-duty LEDO are unsuccessful, the back-up LEDO should assume command and task EOC personnel with contacting another LEDO to fulfill the role of Liaison Officer. In the unlikely event that no LEDO is available to assume the role of Emergency Director, the Emergency Management Coordinator (EMC) will contact the Director's Office, who will designate and authorize a temporary Emergency Director by providing instruction of their responsibilities as described in EPIP-111, *Activation and Operation of the Emergency Operations Center*.

2.2.2 General Concept of Operations

- Persons discovering an abnormal event/condition immediately notify either Security, Fire Dispatch, or their supervisors, who in turn, notify Fire Dispatch or Security.
- The twenty-four hour notification point for LLNL “911” calls is Fire Dispatch/Alameda County Regional Emergency Communications Center (ACRECC) located at LLNL Site 200. Fire Dispatch initiates response by notifying appropriate onsite emergency resources, typically under the command/control of the IC. All 911 calls to ACRECC are monitored by Security’s Central Alarm Station (CAS), who dispatches the Protective Force Division.
- The Alameda County Fire Department Battalion Chief or LLNL Security Duty Officer (SDO) will gather information about the incident and relay it to the EMDO to determine the categorization / classification of the event/situation. The Alameda County Fire Department or LLNL Security Organization will implement initial protective actions and, if required, provide protective action recommendations to appropriate offsite authorities (e.g., Livermore/Pleasanton Fire Department, Livermore Police Department, Alameda County Sheriff, etc.).
- After the EOC becomes operational, the IC retains responsibility for protecting *only* what is defined as the incident scene. Any onsite areas outside of the incident scene fall under the protection of the Emergency Director. The IC and the ED must therefore have a conversation to define and agree on what falls within the incident scene onsite. This decision should be briefed to responders at the scene and to the ERO.
- Protection of offsite areas always remains the responsibility of the Alameda County Fire Department or local law enforcement (i.e., Livermore Police Department or Alameda County Sheriff’s Department). For hazardous material releases, the Alameda County Fire Department has legal authority and responsibility to take appropriate actions (evacuation, shelter in place, etc.) necessary to protect the public and residents of the county. This includes the unilateral decision authority to alert the public of a hazardous incident, restrict or close access of public areas, and/or evacuate an affected area. The authority necessary to carry out these actions at the direction of the Alameda County Fire Department rests with local law enforcement (Livermore Police or Alameda County Sheriff departments) per California Penal Code section 409.5. For security events, the LLNL Security IC or ED can issue protective actions onsite, but may only make protective action recommendations to local law enforcement for offsite populations.

- Upon categorization of an OE, the IC assumes the role of ED until the EOC is declared operational. The EMDO activates the appropriate level of the ERO and initiates appropriate notifications, including the LEDO. The IC manages the emergency until relieved by the on-duty LEDO who then becomes the ED when the EOC is operational. The IC continues to manage the incident scene (see Figure 2.3).
- During localized OEs at Site 300, the Site 300 manager or designated alternate serves as the DOC Commander. This position coordinates the emergency activities of site personnel and equipment and keeps the EMDO and LEDO informed. The EMDO automatically initiates the ERO activation at Site 200 for support of the OE at Site 300 if an event requires a Site Area Emergency (SAE) or General Emergency (GE) declaration. For an Alert or OE Not Requiring Further Classification (OENRFC), the EMDO consults with the LEDO to determine the appropriate ERO activation level.

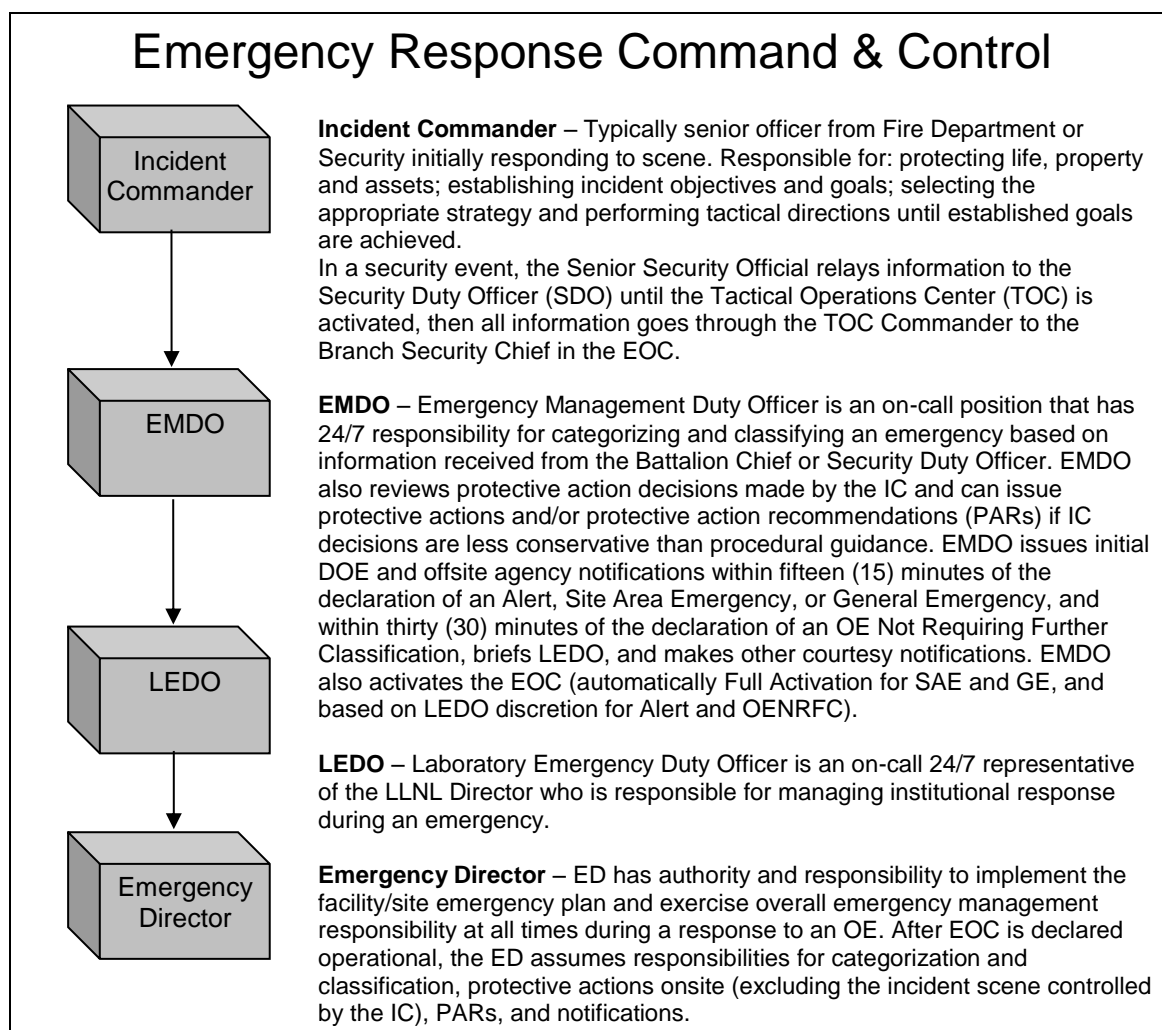


Figure 2.3 Emergency Response Command and Control

2.2.3 Areas of Responsibility for Command and Control

- Classification authority resides with the EMDO prior to EOC being declared operational.
- The LEDO is responsible for determining the appropriate level of ERO activation for Alerts and OEs Not Requiring Further Classification. A Full Activation is automatically made by the EMDO for Site Area Emergency and General Emergency declarations. The LEDO also has the authority to activate the ERO (EOC and DOCs) for emergency events that are not OEs, but where the organizational structure of the ERO and the resources it has increases the effectiveness of LLNL's response to the event.

- Emergency response efforts and resources committed to the incident scene are under the control of the Alameda County Fire Department Battalion Chief or LLNL Security Incident Commander.
- Emergency response efforts and resources used within the LLNL site boundary, but outside the incident scene, are under the control of the ED.
- The Alameda County Fire Department Battalion Chief directing the response to an emergency in or around LLNL manages all firefighting and emergency response resources under their control in accordance with the FIREScope Program as mandated by California Health and Safety Code (Section 13071 - 13070). This may include resources from adjacent jurisdictions such as Livermore/Pleasanton Fire Department or City of Tracy Fire Department.
- Committing DOE/NNSA resources rests with the NNSA/LFO Emergency Manager.

2.2.4 LLNS and NNSA/LFO EOC Authorities

During an OE and operation of the EOC, the NNSA/LFO Emergency Manager monitors LLNL's overall response, provides support to the LLNL Emergency Management Team, and assists with response and recovery-related issue resolution. The NNSA/LFO Emergency Manager will consult with the LLNL Emergency Director on NNSA/LFO concerns or issues related to LLNL's management of the response and its associated recovery.

The LLNL Emergency Director maintains overall managerial command and control of LLNL's response and EOC operations, unless responsibility for this management is formally transferred to the NNSA/LFO Emergency Manager in accordance with Contract 44 Clause H-2, Performance Direction, and provisions of DOE Order 151.1C, Chapter I, Responsibilities, 9.n. Such a transfer will be completed in an orderly and formal manner, and all EOC personnel will be informed of the transfer. LLNL staff will facilitate this transfer and continue to support the response and recovery actions in accordance with the directions of LLNL management.

2.3 Emergency Management Operations and Personnel

The LLNL ERO is divided into two categories: First Responder and Emergency Management. The Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) standard [Title 29, CFR 1910.120(q)] classifies First Responders at one of five levels depending on their responsibilities during an emergency (see Figure 2.4). The HAZWOPER standard requires the use of the Incident Command System (ICS) and Unified Command (UC), which defines the operating characteristics, management components, and structure of incident response throughout the life cycle of an emergency response.

The California Standardized Emergency Management System regulations [Title 19, CCR, Division 2], the National Incident Management System [Homeland Security Presidential Directive - 5], and DOE Order 151.1C outline the need for personnel, beyond those specified by the HAZWOPER standard, to respond to any of a broad range of emergencies. The ERO component formed to manage the response actions during emergencies is the Emergency Management Team. The EMT provides for overall management, direction, and control of the emergency response and normally operates from the LLNL Emergency Operations Center.



Figure 2.4 HAZWOPER Levels

2.3.1 Field Emergency Response Organization

The field ERO is called out to respond and mitigate the emergency situation. The ERO operates under the Incident Command System, and is operational within minutes of activation.

To ensure an acceptable level of emergency-response capability, the size and configuration of the field ERO is maintained to provide an overall response capability that includes the application of the necessary level of resources to mitigate consequences to workers, the public, the environment, national security and to initiate recovery from an OE.

The field ERO consists of personnel from the Fire Department (Fire, HazMat, EMS), the ES&H Teams, and the Security Organization.

2.3.1.1 Alameda County Fire Department

The onsite Fire Department has primary responsibility for providing the LLNL and SNL/CA with emergency response services for fire, technical rescue, hazardous materials, and emergency medical incidents. The onsite Fire Department is administratively a part of the Emergency Management Department and is operated and staffed by ACFD under contract to LLNS. Two full-time stations are staffed by the ACFD at LLNL, with firefighters at Site 200 (Station #20) and at Site 300 (Station #21). A Battalion Chief is on duty for all LLNL emergencies.

The ACFD also operates the Alameda County Regional Emergency Communications Center. Located at LLNL, the center also coordinates mutual aid request for the County of Alameda.

See Sections 4.1.4 and 4.1.6 for a description on the ACFD equipment and ACRECC operations at LLNL.

2.3.1.2 Environment, Safety, and Health Teams

The ES&H Teams are composed of ES&H specialists and technicians from the Environment, Safety, and Health Directorate. The ES&H Teams provide direct support to Laboratory programs/facilities and are the key interface between line organizations and ES&H support organizations. During emergencies, they provide technical support and consultation to the on-scene Incident Commander, be it Security or Fire. The IC works closely with the area ES&H Team through the ES&H Team Leader to develop an incident action plan for controlling emergencies. This plan identifies health and safety requirements, strategic goals, and tactical objectives to protect life, the environment, and property. Under the direction of the IC, a liaison (e.g., ES&H Team Leader, deputy, or technician supervisor) for the cognizant ES&H Team will coordinate all ES&H Team activities at the emergency scene.

During normal working hours, ES&H Team members respond to the emergency scene and report to the IC.

2.3.1.3 Protective Force Division

The LLNL Security Organization's Protective Force Division provides rapid uniformed and armed protection response for the Laboratory. The Protective Force Division derives its authority under Section 161K of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2201K), to carry firearms while engaged in the performance of official duties and to make arrests without warrant for violations of the Atomic Energy Act of 1954.

2.3.2 Emergency Operations Center

The Emergency Operations Center provides centralized coordination for the overall LLNL response to an OE, but is not involved in tactical decisions. It establishes and maintains communication with the various Department Operation Centers and IC. It develops the primary situation and damage/consequence assessment information. In consultation with the EBCC, it sets overall policy and priorities for responding to the emergency and for initial recovery activities. At the discretion of the LEDO, the EOC may also be activated for events that are not OEs.

The EOC also handles Multi-Agency Coordination required by SEMS/NIMS. Specifically, this involves the communication, coordination, and cooperation between LLNL and entities/jurisdictions involved in the response by providing information and insight for the decision-makers in these entities/jurisdictions. The general composition of the EOC consists of representatives from LLNL and NNSA. Typical EOC cadre configuration is shown in Figure 2.5.

There are two formal activation levels for the EOC:

Key - The EOC is operated by key staff. Additional EOC staffing decisions are made by the person fulfilling the role of ED and are dependent on the circumstances surrounding the event.

Full - The EOC and appropriate DOCs are fully staffed and begin operations. Full EOC operations are required due to a major emergency, such as an earthquake, significant hazardous materials release, or terrorist event.

Activation is required for emergencies classified as Site Area Emergency or General Emergency. For Alert, Operational Emergency Not Requiring Further Classification, or a significant situation not classified as an Operational Emergency, the decision on whether to activate is at the discretion of the LEDO, in consultation with the EMDO. For a variety of situations below an emergency classified as a Site Area Emergency or General Emergency, including Alert and OENRFC, the ERO may also be asked to report to the EOC without formal activation/operation for the purpose of monitoring the situation and even performing some actions in support of the LEDO.

The procedure for activation and operation of the EOC is EPIP-111, *Activation and Operation of the Emergency Operations Center*.

The EOC is organized according to SEMS/NIMS functional areas:

Table 2.1 EOC Functional Areas

Emergency Management Team	This is the area where the Emergency Director and his/her command staff (Liaison Officer, Public Information Manager, and Emergency Management Coordinator) operate, providing guidance and direction for the overall emergency response and recovery operations.
Operations	This area represents the field emergency response and support organizations - the actual on-scene emergency responders. It is responsible for the assessment and implementation of field operations.
Planning and Intelligence (P&I)	This area is responsible for receiving, evaluating, and analyzing all information related to the emergency event and providing updated status reports to the EMT and field operations. It is responsible for creating and distributing an EOC Incident Action Plan. It is also responsible for hazardous material release consequence assessment, facility/site damage assessment, and developing specialized technical assessments of the event
Administration, Logistics, & Finance	This area is responsible for procuring and staging supplies, personnel, and material support necessary to conduct the emergency response. It documents expenditures, purchase authorizations, damage to property, equipment usage, vendor contracting, and other legal/business issues. This area is also responsible for Workers Compensation and Claims, and coordinating the Employee Assistance Program's Critical Incident Stress Management. It is also responsible for EOC-related communication equipment and information technology systems.

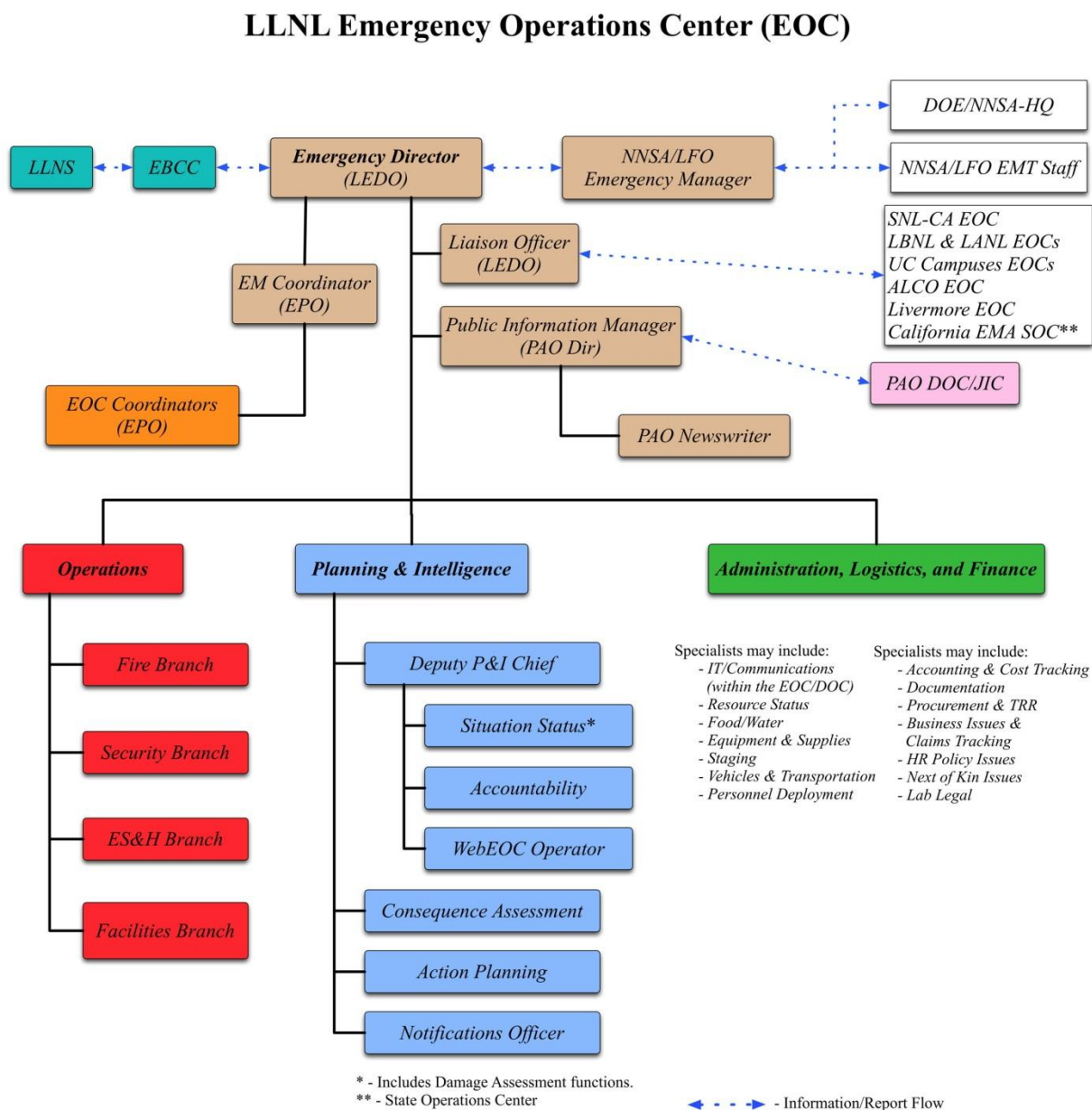


Figure 2.5 Emergency Operations Center

2.3.2.1 Emergency Management Team

The EMT includes four positions, plus several additional personnel who assist management, as described below.

The EMT consists of the following positions:

- Emergency Director – Always filled by the on-duty LEDO unless replaced due to succession issues.

- Liaison Officer – Filled by back-up LEDO.
- Emergency Management Coordinator (EMC) – Filled by a senior member of the LLNL Emergency Management Department.
- Public Information Manager – Filled by LLNL Director of Public Affairs or designee.

Other positions supporting the EMT are:

- NNSA/LFO Emergency Manager – Federal oversight, serving on behalf of the Cognizant Field Element manager.
- NNSA/LFO Public Affairs Officer – Federal oversight, providing emergency public information support to the NNSA/LFO Emergency Manager.
- WebEOC[®] Operator – Located in EMT room and reports to the EMC.
- Newswriter – Located in PAO Office or EOC, but directly reports to the Public Information Manager.
- EOC Coordinators – One covers P&I/Operations/Logistics/Finance and Administration Sections; and one is roving as needed. All report to the EMC.

2.3.2.2 Operations Section

This section is managed by the Operations Chief.

Positions reporting to the Operations Chief are the Fire Branch Lead, Security Branch Lead, ES&H Branch Lead, Facilities Branch Lead, and the Volunteer Emergency Radio Group (VERG) Lead.

2.3.2.3 Planning and Intelligence Section

This section is managed by the Planning and Intelligence (P&I) Chief.

Positions reporting to the P&I Chief are the Deputy P&I Chief, Action Planning Leads, Accountability Lead, Notifications Officer, Damage Assessment Lead, Situation Status Lead, Consequence Assessment Team Lead and Modeler, and WebEOC[®] Operator.

2.3.2.4 Administration, Logistics, and Finance Section

This section is managed by the Administration, Logistics, & Finance Chief.

Specialist staff that may be contacted to support Logistics include Communications, Resource/Supplies, Care/Shelter, and Transportation personnel.

Specialist staff that may be contacted to support Finance and Administration include Cost and Budget, Procurement, Human Resources, Compensation and Claims, and Legal personnel.

2.3.3 Department Operations Centers

Essential response organizations at LLNL have DOCs that provide technical support to the EOC and manage their field and/or regulatory responses from these centers. These DOCs are located at various sites throughout the Laboratory (see Figure 2.6 for basic DOC structure). These centers are connected with the EOC via the WebEOC[®] system and by telephone. Individual DOC Plans outline the operations specific to each DOC's response activities. The DOC Plans are reviewed periodically by EPO staff and revisions recommended to reflect changes to the EPlan.

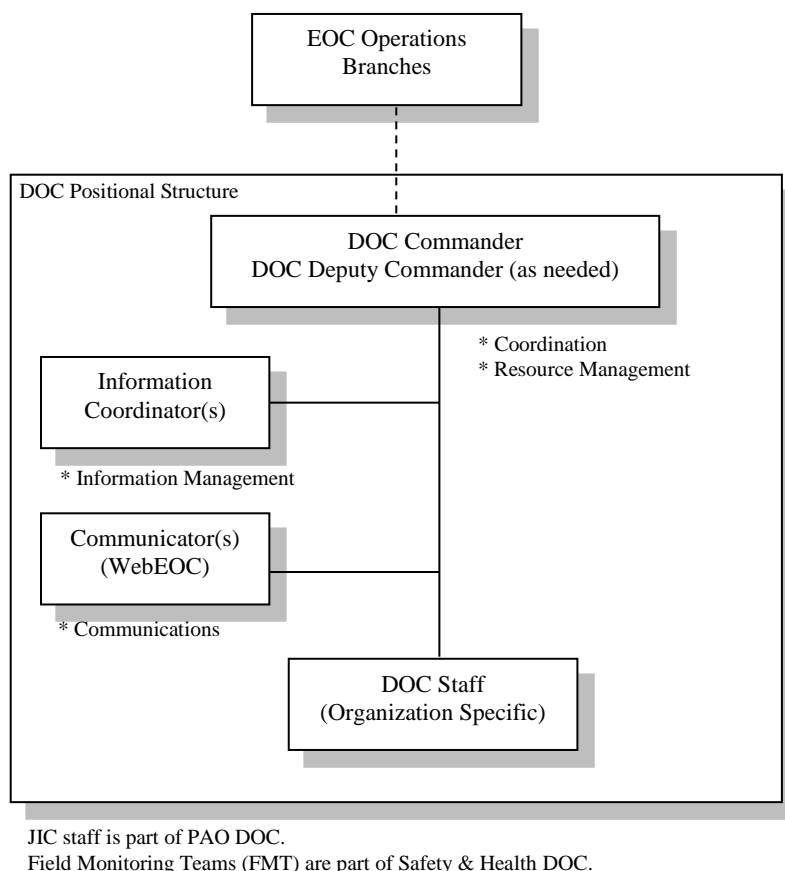


Figure 2.6 Basic DOC Structure

2.3.3.1 Environmental

The Environmental DOC staff is responsible for evaluating the emergency situation to determine potential or actual impacts to the environment; meeting regulatory reporting requirements; marshaling necessary personnel to assist in the response, cleanup, and disposal of hazardous substances; modeling potential environmental impacts from airborne releases; identifying appropriate clean-up standards and levels; coordinating interactions with environmental regulatory agencies; and notifying Federal, State, and local agencies on environmental issues.

The DOC also provides logistical support to Environmental Functional Area field personnel on the ES&H Teams. The DOC can provide personnel to support the Field Monitoring Teams deployed through the Safety & Health DOC.

2.3.3.2 Safety & Health

The Safety & Health DOC staff is responsible for evaluating health and safety implications during an emergency. These personnel have expertise in explosives safety, fire protection, health physics, industrial hygiene, biological safety, industrial safety, and criticality safety. They can be called in to advise the DOC and/or EOC. The DOC is responsible for the deployment of the Field Monitoring Teams that collect data for the consequence assessment effort in the EOC. The DOC also provides logistical support for department and ES&H Team operations during major emergencies. Action and status information on DOC activities are summarized and relayed to and from the EOC.

2.3.3.3 Health Services Department

The Health Services Department DOC provides medical management of incident casualties, including medical decontamination.

2.3.3.4 Facilities & Infrastructure

The Facilities & Infrastructure DOC coordinates and controls personnel, equipment, and resources for plant maintenance and utilities. Action and status information is summarized and relayed to and from the EOC. The EMT representative from Facilities & Infrastructure Directorate acts as the point-of-contact for both the Facilities & Infrastructure DOC and other organizations within the Operations and Business Principal Directorate (i.e., Business Directorate, Nuclear Operations Directorate, etc.) that may be needed during the OE.

2.3.3.5 Public Affairs Office

The Public Affairs Office DOC coordinates and releases LLNL information to employees and the public. It also functions as the focal point for outside news inquiries associated with the emergency.

2.3.3.6 Security Organization's Tactical Operations Center

LLNL's Protective Force Division staffs the TOC, which supports the Security IC in tactical matters and the Laboratory's EMT in OE response. If the emergency is security driven, the center serves as the primary focal point for the Security IC. The TOC also serves as the point-of-contact for outside law enforcement agencies and coordination of the LLNL Security Condition (SECON) declarations. SECON declarations are made at various levels based on threats posed to LLNL by the event. Actions and criteria for implementing a security condition level are described in the *LLNL Security Condition (SECON) Implementation Plan*.

2.3.3.7 Site 300

The Site 300 DOC coordinates the activities of Site 300 and reports results to the LEDO or to the ED if the Livermore site EOC is operational. In addition to the emergency response resources integral to Site 300, additional support may be drawn from the Livermore site.

2.3.4 Executive Business Coordination Center

In the Executive Business Coordination Center, the Laboratory Director and/or designated executive staff gather to monitor the progress of the emergency, provide business continuity, facilitate implementation of LLNL Continuity of Operations (COOP) plans, and maintain contact with the Lawrence Livermore National Security, LLC parent companies in accordance with LLNS notification policies and protocols. A LEDO, if available, is assigned to the EBCC by the ED to provide liaison with the EOC. The Emergency Management Department Head has responsibility for coordinating procedures and policies for the operation of the EBCC.

Members of the EBCC include:

- Laboratory Director/Deputy Director (or designee)
- Chief of Staff
- EOC liaison (LEDO)
- PAO liaison, as needed
- Associate Director (or designee) as necessary to address issues of continued operations

The EBCC's primary responsibilities include:

- Monitor progress of an OE at LLNL and provide business continuity at the Laboratory.
- If requested by PAO, serve as the official LLNL spokesperson.
- Notify and inform key LLNL constituents and stakeholders.
- Provide direction for the resumption of research, programmatic, and administrative activities.
- Concur on a team to manage the recovery process.

The EBCC's support responsibilities include:

- Provide overall direction for policy issues.
- Provide overall direction for the institutional priorities in the business recovery process.

2.3.5 ERO Duty Officers (Onsite/On-call)

2.3.5.1 Laboratory Emergency Duty Officer

LLNL has an authorized LEDO available onsite or on-call 24 hours-a-day, 7 days-a-week to take the actions necessary to protect the health and safety of employees, the public, and the

environment, and to maintain the facility's security during abnormal and emergency situations. The LEDO represents the Laboratory Director as the senior LLNS official at LLNL during an emergency affecting the Laboratory. The LEDO serves as a consultant to the IC, the Director's Office, and cognizant senior management. During an OE, the LEDO or EMDO may activate the EOC, at which time the LEDO becomes the Emergency Director when the EOC is declared operational.

2.3.5.2 Emergency Management Duty Officer

LLNL has an authorized EMDO available onsite or on-call 24 hours-a-day, 7 days-a-week to categorize and classify events and to implement/recommend protective actions necessary to protect the health and safety of employees, the public, and the environment per procedures. Protective actions issued by EMDOs should never be less conservative than the actions implemented by the IC without the concurrence of the on-scene IC. The EMDO also makes immediate DOE and offsite agency notifications within fifteen (15) minutes of the declaration of an Alert, Site Area Emergency, or General Emergency, and within thirty (30) minutes of the declaration of an OE Not Requiring Further Classification. The EMDO also makes other courtesy notifications at the request of the LEDO or as defined in EPIP-51, *Emergency Notifications*. The EMDO briefs the LEDO on all events, including the protective actions implemented and/or recommended. Unless the event has been classified as a Site Area Emergency or General Emergency, the EMDO consults with the LEDO to determine the appropriate level of ERO activation, and then carries out ERO activation protocols.

2.3.5.3 Battalion Chief

An Alameda County Fire Department chief officer (Battalion Chief) is available on duty 24 hours-a-day, 7 days-a-week to supervise and lead the Fire Department companies responding to emergencies at LLNL. The Battalion Chief is responsible for Fire Department management responses and mitigation of fire, technical rescue, HazMat, and medical emergencies. When an event occurs at LLNL, the Battalion Chief notifies and consults with the EMDO, who is responsible for categorizing the event and further classifying OEs as necessary.

2.3.5.4 Security Duty Officer

The Security Organization has a Security Duty Officer (SDO) available on-call 24 hours-a-day, 7 days-a-week to provide oversight of security resources in the case of an unplanned event or situation. SDOs are notified as members of the Laboratory's emergency response team and ensure the Laboratory's security posture is maintained during abnormal unplanned events or situations. In the absence of security management, or during off hours or holidays, the SDO acts with the full authority of the Security Organization Director or his/her designated alternate.

2.3.5.5 Environmental Duty Officer

The Environmental Functional Area has established an Environmental Duty Officer (EDO) position which is on-call 24 hours-a-day, 7 days-a-week, and coordinates off-hours environmental emergency response and reporting activities and provides input and support to other First Responders for compliance with environmental regulations. The EDO also coordinates response from other environmental specialists. The EDO also supports the LLNL's BioWatch Program by being the on-call 24 hours-a-day, 7 days-a-week contact. The EDO directs questions and requests to the appropriate BioWatch Program personnel.

2.3.5.6 Occurrence Reporting Duty Officer

An Occurrence Reporting Duty Officer (ORDO) is on-call 24 hours-a-day, 7 days-a-week. During an OE, the ORDO is available for providing assistance to the LEDO or EMDO in calling out the ERO and in making offsite notifications. Once the EOC is operational, the ORDO is present in the EOC to make written notifications to the DOE Headquarters Operations Center and other offsite entities.

2.3.5.7 Public Affairs Duty Officer

A Public Information Officer from the LLNL Public Affairs Office is on duty 24 hours-a-day, 7 days-a-week, principally to respond to off-hours inquiries from the news media. The PAO Duty Officer is usually the initial PAO contact point in the event of an off-hours LLNL emergency situation.

2.4 Activation of the Emergency Response Organization and Response Facilities

2.4.1 OE Activation

In the event of an OE, the EMDO will:

1. Notify the LEDO
2. Activate the EOC and DOCs, based on event classification and in accordance with the EPlan and EPIP procedures (see Table 2.2). Activation of all facilities is automatic for General Emergencies. Activation of all facilities, except the JIC (LEDO discretion in consultation with the PAO Manager), is automatic for Site Area Emergencies. For other emergency events, OEs at the Alert level, or OEs Not Requiring Further Classification, activation is based on LEDO guidance.
3. Provide initial offsite notifications.

The time it takes to declare the EOC "operational" during normal working hours is within sixty (60) minutes of EOC activation notification. During non-working hours, EOC "operational" status is within a minimum of sixty (60) minutes and a maximum of 120 minutes of EOC activation notification.

The EOC organizational structure develops in a top-down modular fashion that is based on the size and complexity of the incident. The staffing level or functional areas are determined based on the need to effectively manage the incident. The ED may declare the EOC **operational** when they have sufficient situational awareness and have established the level of organization needed.

The key staffing or functional areas for declaring the EOC **operational** would include:

- **Management** functional area:
 - Emergency Director
 - Public Information Manager *
 - Emergency Management Coordinator / EOC Coordinator
- **Operations Section** functional area:
 - Operations Section Chief
- **Planning & Intelligence Section** functional area:
 - Consequence Assessment Analyst (*HazMat event only – may also be filled by an off-duty EMDO*) or Planning & Intelligence Section Chief

* *Either in the EOC or direct communications established (e.g., PAO DOC or JIC).*

Table 2.2 Activation of Emergency Operations Facilities and Selected Response Assets

	EOC	DOCs	JIC	Field Monitoring Teams
OE (Not Requiring Further Classification)	Note 1	Note 1	Note 2	No
Alert	Note 1	Note 1	Note 2	Note 1
Site Area Emergency	Yes	Yes	Note 2	Yes
General Emergency	Yes	Yes	Yes	Yes

Note 1: At the discretion of the ED/LEDO.

Note 2: Public Affairs option, depending upon the nature of the event

2.4.2 Non-OE / Significant Event Activation

The EOC and the various DOCs may be activated for events that are not declared OEs. This could occur when emergency management (e.g., LEDO, EMDO, EBCC, etc.) considers the support available from these entities would be of assistance in responding to the event, such as, the loss of major utility services to LLNL. Under these situations, the ERO will operate using its procedures as appropriate guidance (i.e., naming a Recovery Manager would not be a necessary condition for termination).

2.5 Declaration of an Emergency

2.5.1 Operational Emergencies

Declaration of an OE Not Requiring Further Classification may require the activation of the emergency response facilities and the availability of personnel and resources to continuously

assess pertinent information for decision-makers; conduct appropriate assessments, investigation, or preliminary sampling and monitoring; mitigate the event consequences; and prepare for other response actions should the situation become more serious and require additional ERO mobilization.

At the declaration of an Alert, the ED/LEDO may direct the EMDO to activate emergency response facilities. These facilities provide personnel and resources to continuously assess pertinent information; conduct appropriate assessments, investigations, or preliminary sampling and monitoring; mitigate the severity of the event consequences; and prepare for other response actions should the situation become more serious requiring additional ERO mobilization.

Declaration of a Site Area Emergency requires activation of emergency response facilities including the responses listed under Alert, in addition to initiation of predetermined protective actions for onsite personnel; notification and assembly of additional emergency response personnel and equipment to activate response centers and to establish communications, consultation, and liaison with offsite authorities; provision of information to the public and media; implementation of protective actions; and mobilization of additional emergency response assets for immediate dispatch should the situation become more serious.

Declaration of a General Emergency requires the same response as for a Site Area Emergency, in addition to the notification of offsite authorities to provide recommendations for public protective actions and JIC activation.

2.5.2 LLNL State of Emergency

Depending on the scope and scale of the emergency, the Laboratory Director, or Deputy Director acting for the Director, may elect to declare a “State of Emergency” at LLNL in accordance with LLNL Personnel Policies & Procedures Manual (Section G - VII.4). This is a formal mechanism for the Laboratory Director to authorize exceptions to provisions of Laboratory policies and procedures when such exceptions are in the best interest of LLNL operations or will facilitate or enhance LLNL's response to the emergency. Such a declaration would allow for the use of predetermined deviations from Laboratory policies and procedures, for example, the authorization of paid emergency leave if the Laboratory site was closed for an extended period of time due to a pandemic public health emergency. This would be an appropriate declaration to an ongoing emergency situation that effectively prevented employee attendance at work and continuance of work at LLNL. A sample 'Declaration of a Laboratory Emergency' can be found in Appendix E of ES&H Manual Document 22.8, *Continuity Programs*.

2.6 Other Emergency Response Assets

2.6.1 Field Monitoring Teams

When required, the Worker Safety & Health Functional Area, the Radiation Safety Functional Area and the Environmental Functional Area provide onsite (outside the immediate incident

scene) and offsite monitoring capabilities to the EOC Consequence Assessment function through the use of a pool of team members. When an emergency classification of Site Area Emergency or General Emergency is declared, the Field Monitoring Team (FMT) will be called in to supply real-time monitoring data to refine the results of the analytical models. Field monitoring data is also used to support the adequacy of emergency response actions taken to protect workers and the public. The ED and/or consequence assessment analyst will request the activation of the FMT through the Safety & Health DOC.

Prior to any deployment, the FMT will have an approved monitoring plan. When ES&H Teams are being deployed onsite only, the Safety & Health DOC Commander will review and approve the monitoring plan; in the case of offsite deployment, the ED will provide final review and approval after consulting with appropriate offsite agencies.

2.6.2 Technical Support

A Health Services representative may be requested to advise the EMT on issues including health implications of emergency situations, triage, treatment, and transport of injured individuals.

The National Atmospheric Release Advisory Center (NARAC) may be requested through the Consequence Assessment function in the EOC to advise the EMT on the implications of toxic or radiological releases. NARAC, a part of LLNL's Global Security Principal Directorate, provides real-time assessments of the consequences from an atmospheric release of radioactive or toxic material.

Using professional staff, numerical models, computer systems, and network links about the country, NARAC can transmit information about an accident, exercise, or potential accident in the form of graphic plots of contours of dose and/or air concentration and ground deposition of toxic materials.

2.6.3 Credibility Assessment

The Security Organization's SDO will advise the EMT regarding the credibility of any potential incident such as terrorist activities or bomb threats. The assessment will be based on information provided by the Security IC and the Office of Investigative Services at LLNL.

2.6.4 Structural Evaluation Assessment Field Teams

The Facilities & Infrastructure DOC is supported by five Structural Evaluation Assessment Field Teams to:

- Respond to any emergency such as:
 - Earthquake, flood, high wind or tornado damage assessment.
 - Accident, explosion, or fire recovery assessment.

- Aid or provide consultation to First Responders in situations where poor or degraded structural integrity cause a potential life-safety hazard.

Each Structural Evaluation Assessment Field Team consists of three people, including a Structural Engineer, an Architect, and a Building Inspector. At least one member of each team has been trained as a Safety Assessment Program (SAP) Responder for the California Office of Emergency Services (Cal OES).

The Structural Evaluation Assessment Field Teams will assemble at the Facilities & Infrastructure DOC, where they collect resources and wait for instructions. Teams will be dispatched by the EOC through the Facilities & Infrastructure DOC. The Teams will contact the Facilities & Infrastructure DOC when arriving at, and leaving from, each facility or location. Before leaving a facility or location, the Team will complete the Evaluation Safety Assessment Form and tag all major building entrances – GREEN: re-entry for normal occupancy permitted; YELLOW: restricted use permitted; RED: do not enter or occupy.

In the event of an emergency such as a major seismic event, buildings will need to be inspected by the Structural Evaluation Assessment Field Teams. Because this resource is limited and there will be an urgent need to reoccupy certain facilities to deal with the emergency, these inspections will be done in accordance with the priorities listed in EPIP-71, *Emergency Protective Actions and Reentry*.

2.7 ERO Positions

The following are the defined positions of the ERO at LLNL, some of which are staffed by multiple persons (e.g., EOC Coordinators, Action Planning Leads, Field Monitoring Teams, JIC staff, etc.). The number of defined positions also does not include specialist positions or staff augmentation positions such as Human Resources or Legal positions that may be called upon because of their specialties. The defined positions are listed below:

FIELD EMERGENCY RESPONSE ORGANIZATION

Alameda County Fire Department

- Battalion Chief
- Incident Commander (Chief Officer, Captain)
- ACRECC/Fire Dispatcher

Security Organization

- Security Duty Officer
- PFD Watch Commander/Security Incident Commander/TOC Commander
- TOC/CAS Dispatcher
- PFD Field Staff (Sergeants)

ES&H Team Management

- ES&H Team Leader
- ES&H Team Deputy Leader
- ES&H Team Technician Supervisor
- ES&H Team Technicians
- ES&H Team Disciplines

MULTI-AGENCY COORDINATION SYSTEM

EOC

EOC Management Section

- Emergency Director
- Liaison Officer
- Emergency Management Coordinator
- EOC Coordinators
- Public Information Manager
- PAO Newswriter

Operations Section

- Operations Chief
- Fire Branch Lead
- Security Branch Lead
- ES&H Branch Lead
- Facilities Branch Lead
- Volunteer Emergency Radio Group Lead

Planning and Intelligence Section

- Planning and Intelligence Chief
- Deputy Planning and Intelligence Chief
- Situation Status / Action Planning Lead
- Damage Assessment Lead
- WebEOC[®] Operator
- Notifications Officer
- Accountability Lead
- Consequence Assessment Team Lead
- Consequence Assessment Team Modeler

Administration, Logistics, and Finance Section

- Administration, Logistics, and Finance Chief
- Logistics Section Staff (e.g., Resources/Supplies; Care/Shelter; IT/Communications Support Staff)

- Finance and Administration Section Staff (e.g., Cost and Budget; Procurement; Compensation and Claims, Human Resources)

DOCs

- DOC Commander
- DOC Information Coordinator
- DOC WebEOC[®] Operator
- Field Monitoring Team (FMT) Coordinator
- PAO DOC/JIC Staff
- DOC Staff

EBCC

- Executives
- WebEOC[®] Operator

3 OFFSITE RESPONSE INTERFACES

3.1 Overview

In the event of an emergency at LLNL, a number of offsite resources are available for mitigation, response, and recovery activities associated with the response. It is the purpose of this section to briefly describe those Federal, State, local, and private agencies that may be involved in an OE response. In addition, the interfaces between LLNL and these agencies are discussed, including documented agreements.

The Emergency Programs Organization is the point-of-contact with offsite agencies for non-security emergency planning, preparedness, and response. This includes, but is not limited to, offsite planning coordination for LLNL, inter-agency meetings, and information transfer. The Fire Department has ongoing contacts with local response agencies through mutual aid agreements and actual response. LLNL Public Affairs Office is the point-of-contact with offsite agencies in the area of public education. Additionally, the Emergency Management Department Head and Emergency Programs Organization Manager meet regularly with their counterparts from the three other Bay Area DOE facilities (LBNL, SNL/CA, and SLAC) to discuss common issues and approaches to emergency management, as well as resource sharing during emergency events.

Memoranda of Understanding (MOUs), Memoranda of Agreement (MOAs), and mutual aid agreements exist among specific functional LLNL organizations and departments and their counterparts. The Security Organization develops and signs security/law enforcement-related MOUs for LLNL. The Emergency Management Department develops and signs MOUs related to the fire/emergency medical services/HazMat arena and provides these services at LLNL under contract with the Alameda County Fire Department. The Emergency Management Department also develops and signs MOUs associated with local medical facilities. A list of the existing MOUs/MOAs is located in the current ERAP.

In addition, DOE/NNSA maintains a number of emergency response assets and inter-agency agreements with other Federal agencies that may be called upon for support.

LLNL has established mutual aid agreements with local, county, State, and national organizations including:

- Alameda County
- Alameda County Sheriff's Department
- California Department of Forestry & Fire Protection
- California Highway Patrol

- City of Livermore
- City of Tracy
- Department of Energy/NNSA and Livermore Field Office (LFO)
- Eden Medical Center
- Lawrence Berkeley National Laboratory
- Livermore Police Department
- San Joaquin County Sheriff's Department
- San Ramon Valley Fire Protection District
- Sandia National Laboratories
- State of California Office of Emergency Services
- University of California, Office of the President
- ValleyCare Health System
- Sutter Tracy Community Hospital

The entities above are provided annually a current copy of the LLNL Emergency Plan.

Department of Energy/National Nuclear Security Administration

DOE/NNSA is the lead Federal agency for emergencies at LLNL, except for certain security situations when the Federal Bureau of Investigation (FBI) may be the lead. The resources available from DOE/NNSA are extensive and include those from Federal agencies that are part of the *National Response Plan*. These assets include:

- Aerial Monitoring System
- Nuclear Weapons Accident Response Group
- National Atmospheric Release Advisory Center
- Joint Technical Operations Team
- Radiological Assistance Program
- Radiation Emergency Assistance Center/Training Site

The LLNL ED initiates the request for support of DOE/NNSA assets depending upon the nature and severity of the event. DOE/NNSA HQ Operations Center (OC) approves these requests via NNSA/LFO.

Depending on the severity of an event at LLNL, DOE/NNSA HQ may activate their OC. A technical support center, located in the DOE Germantown, Maryland facility, can support the OC. Both of these facilities can communicate via telephone, the Emergency Communications Network, facsimile, and video conferencing.

The twenty-four hour notification point of contact is the OC Watch Room, which is collocated with the OC. During an OE, LLNL makes notifications to the OC.

3.2 Other Federal Agencies

The FBI maintains primary jurisdiction under the Atomic Energy Act for incidents involving the protection of special nuclear material and any crime involving Federal property. In an emergency situation involving security incidents, the FBI will be notified (as required) by the Security Organization and may be provided workspace in the EOC or the TOC.

An MOU exists between the FBI, San Francisco Office, NNSA/LFO, and the Security Organization, which encompasses emergency response and law enforcement. The *Emergency Readiness Assurance Plan* provides a list of MOUs; however, the actual MOUs are maintained in the Emergency Management Department files.

The FBI has the authority to assume command from the LLNL ED during a situation involving a security threat. Under these circumstances, the ED is responsible for ensuring that the LLNL ERO implements FBI orders. The Fire Department IC retains non-security command and control at the scene.

3.3 Tribal Organizations

There are no tribal organizations with emergency response or regulatory control responsibilities relevant to LLNL.

3.4 State Government

The Alameda County Sheriff Department Office of Homeland Security and Emergency Services (OHS & ES) takes the lead for offsite response when notified of an emergency at LLNL. In that lead role, they would coordinate with the State for assistance and resources.

The State of California's emergency assistance is based on a statewide mutual aid system designed to ensure that additional resources are provided to and among local jurisdictions whenever their own resources are committed or inadequate. State agencies are obligated to provide available resources to assist local jurisdictions in emergencies at the direction of the California Governor's Office of Emergency Services (Cal OES). The Department of Homeland Security (DHS) developed a National Incident Management System under Homeland Security Presidential Directive (HSPD) –5, Management of Domestic Incidents. NIMS is similar to California's Standardized Emergency Management System which was adopted through legislation and regulation in the 1990's. Under SEMS, the State's assistance is accessed by requesting resources through the operational area coordinator and the Alameda County Sheriff's OHS & ES. Fire and mutual aid resources are requested through the local and State mutual aid

system. The Fire Department, operated by the Alameda County Fire Department, complies with the requirements of SEMS/NIMS for First Responders.

Cal OES is the lead State agency in any response to assist Alameda County and is responsible for making statewide resources available.

The California State Department of Health Services provides trained personnel to assist with monitoring and decontaminating personnel, evaluating the extent of any contamination, and monitoring offsite ingestion pathways.

3.4.1 California Office of Emergency Services

LLNL has several MOUs with Cal OES. These MOUs include an agreement for California disaster and civil defense, an agreement for temporary transfer of vehicular equipment, and an agreement for use of radio equipment.

Coordinators designated by State agencies assist California's emergency management staff headed by the director of Cal OES or a designated representative. Cal OES is the lead State agency for emergency management, including planning, response coordination, recovery coordination, mitigation efforts, and training.

Emergency responsibilities of Cal OES include:

- Developing and implementing the State Emergency Plan
- Receiving and disseminating emergency alerts and warnings
- Coordinating emergency response and recovery activities with the Federal Regional Operation Center and the JIC
- Processing and acting on mutual aid requests
- During emergencies, activating and operating the State Operations Center and regional emergency operations centers and participating in the disaster field office activities
- In coordination with the Federal government, directing and coordinating recovery programs to mitigate future disaster

When the State Operations Center and regional operations centers are activated, the following actions will be taken to support the situation:

- Establish and maintain communications with other EOCs and DOCs
- Deploy field representatives as needed to assess the situation
- Coordinate and deploy immediate assistance, as requested, through mutual aid
- Establish/confirm air and ground routes into affected areas
- Determine the need for staging areas, mobilization centers, and disaster support areas, and coordinate their establishment
- Provide/deploy technical assistance to supported elements as needed

- Mobilize and stage key resources to address the potential threat
- Monitor and prioritize scarce resources as the situation dictates

Other State agency responsibilities are to provide mutual aid to local jurisdictions appropriate to the emergency situation (*State of California Emergency Plan*).

3.4.2 California Highway Patrol

Upon request, the California Highway Patrol supports the Security Organization by responding with personnel and equipment, including helicopter support when warranted. The California Highway Patrol, in responding to an emergency request for assistance to LLNL, will render support to the Security Organization by maintaining traffic supervision and control over roadways to LLNL operating under a Joint Incident Command system. The nature of the emergency response agreement between LLNL and the California Highway Patrol includes assistance calls and assistance requests under the State *Region II Mutual Aid Law Enforcement Plan*.

3.5 Local Organizations

3.5.1 Alameda County Sheriff's Office of Homeland Security & Emergency Services

The Alameda County Sheriff's OHS & ES is the lead offsite response coordination agency for major emergency and disaster situations at or affecting the Livermore site. The Fire Department Battalion Chief or the Security Incident Commander at LLNL is the point-of-contact for those requests for resources for mutual aid systems, such as fire or law enforcement mutual aid, respectively.

The County operates its EOC in coordination with these organizational response levels: field response, local government, operational area, regional, and State. The County EOC operates according to SEMS, including the primary SEMS functions of Command/Management, Operations, Planning/Intelligence/Logistics, and Finance/Administration.

If the emergency situation requires that the general public be warned, the emergency public information is issued by the cognizant local agency, such as the City of Livermore or Tracy, County of Alameda or San Joaquin, depending upon the area impacted by the incident.

3.5.2 Alameda County Sheriff's Department

Upon request, the Alameda County Sheriff's Department responds with personnel and equipment, including a special response unit when warranted, to support the Security Organization. Support activities are coordinated by the Security Organization representative in the TOC and may include assistance in responding to security threats and assistance in evacuating the site. The emergency response agreement between the Alameda County Sheriff's Department and LLNL covers assistance calls and assistance requests under the State *Region II Mutual Aid Law Enforcement Plan*.

3.5.3 San Joaquin County Office of Emergency Services

San Joaquin County Office of Emergency Services serves in the same capacity for Site 300 as the Alameda County Sheriff's OHS & ES serves for the Livermore site.

3.5.4 San Joaquin County Sheriff's Department

Upon request, the San Joaquin County Sheriff's Department responds with personnel and equipment to support a LLNL Site 300 emergency or an immediate officer rescue or backup. The emergency response agreement between the San Joaquin County Sheriff's Department, LLNL, and Site 300 managers covers assistance calls and assistance requests under the State *Region II Mutual Aid Law Enforcement Plan*.

3.5.5 Alameda County Agreement for Mutual Fire Assistance

LLNL is a signatory to the Alameda County Mutual Aid Plan for mutual fire assistance. This agreement confirms that, upon request, the associated fire services will respond with personnel and equipment to support LLNL emergencies. These agencies, in responding to an emergency request for assistance, render support to the Alameda County Fire Department.

3.5.6 Livermore/Pleasanton Fire Department

The Livermore/Pleasanton Fire Department is responsible for coordinating disaster planning and emergency response activities for the cities of Livermore and Pleasanton. The Livermore/Pleasanton Fire Department coordinates its activities with the Alameda County Sheriff's OHS & ES, the primary offsite agency for emergencies involving radioactive material. The Livermore/Pleasanton Fire Department assists other responding agencies in locating and providing needed equipment and resources and in updating city officials. In addition, if the primary communication links become unavailable, the Livermore/Pleasanton Fire Department assists in the activation of the amateur radio emergency services network, Tri-Valley Amateur Radio Emergency Service.

3.5.7 Livermore Police Department

The Livermore Police Department may be requested to support an LLNL emergency or an immediate officer rescue or backup. In responding to an emergency request for assistance, they render support to the Security Organization by responding to security threats, controlling traffic, controlling facility access and assisting with evacuation of the site. The Security Organization representative in the TOC or designee coordinates support activities. The law enforcement assistance agreement between Livermore Police Department and LLNL covers assistance calls and assistance requests under the State *Region II Mutual Aid Law Enforcement Plan*.

3.5.8 Tracy Fire Department

The Tracy Fire Department is responsible for coordinating disaster planning and emergency response activities for the City of Tracy. The Tracy Fire Department coordinates its activities

with the San Joaquin County OES, the primary offsite agency for emergencies involving radioactive material in San Joaquin County.

3.5.9 Offsite Medical Facilities

MOUs are in place with ValleyCare Health System, Eden Medical Center, and Sutter Tracy Community Hospital to provide medical support and to assist the LLNL Health Services Facility, if needed. These facilities have the capability to assist in the treatment of chemically-, biologically-, and/or radiologically-contaminated or contaminated/injured victims resulting from a hazardous material release at LLNL (see Section 9 of this EPlan). For mass casualty events, the Alameda County Regional Emergency Communications Center (ACRECC) issues Mass-Casualty Incident (MCI) alerts and advisories for Alameda County and coordinates the transportation of patients to hospitals in the area/region that are available. ACRECC also facilitates radio interoperability between ground/air ambulances and hospital emergency rooms as needed.

3.5.10 City of Livermore Disaster Council

The City of Livermore Disaster Council was formed to develop emergency planning and preparedness partnerships with local agencies in order to enhance the ability to respond to disasters.

3.5.11 Alameda County Emergency Manager's Association (EMA)

The purpose of Alameda County EMA is to recruit a wide range of emergency managers from public agencies, nonprofits, and the private sector into an organization/association dedicated to sharing among, contributing to, improving upon, learning from, and empowering those involved in the field of emergency management.

3.5.12 California Emergency Services Association (CESA)

The California Emergency Services Association has the mission of preserving and protecting property through emergency preparedness and disaster mitigation. The membership is composed of emergency managers and planners from all levels of government (city, county, State, Federal, special districts), hospital/medical professionals, education representatives, public service organizations, business/industry emergency planners and other individuals interested in this field. CESA is divided into three geographic Chapters-Inland, Coastal and Southern. Each chapter has regularly scheduled Board meetings and holds informational seminars and training sessions throughout the year.

3.6 Private Organizations

The Tri-Valley VERG is a private, volunteer organization of individually-licensed amateur radio service operators who, having passed a written examination, have demonstrated their technical

and operating skills in radio communications and are licensed by the Federal Communications Commission.

A Memorandum of Understanding has been executed between LLNL and the Volunteer Emergency Radio Group (VERG) network for LLNL employees who are members of VERG to support LLNL with communication services during emergency conditions. Under this MOU, the LLNL Emergency Director is authorized to activate the volunteer communications resources of VERG to provide emergency and disaster communications support to LLNL.

There are no other private organizations with emergency response or regulatory control responsibilities relevant to LLNL.

3.7 Memoranda of Understanding/Memoranda of Agreement

The Emergency Management Department coordinates the administration of MOUs and MOAs with external entities that provide onsite emergency response and management support to LLNL. These agreements are maintained as part of the Laboratory's commitment to an emergency management program that is consistent with the State of California Standardized Emergency Management System. MOUs and MOAs related to onsite emergency response are developed and executed in accordance with LLNL policies and procedures.

The Security Organization maintains MOUs with the California Highway Patrol, Alameda and San Joaquin County Sheriff's Departments, and the City of Livermore Police Department to provide and receive law enforcement assistance. NNSA/LFO maintains the MOU with the FBI. Assistance from the FBI comes under their jurisdiction for events involving special nuclear material, threats, or uses of weapons of mass destruction and crimes on Federal property. State, county, and City of Livermore assistance is accomplished per the provisions of the State *Region II Mutual Aid Law Enforcement Plan*.

The Emergency Management Department maintains MOUs with Eden Medical Center, ValleyCare Health System, and Sutter Tracy Community Hospital for providing and receiving assistance in the treatment of chemically-, biologically-, and/or radiologically-contaminated persons in need of additional medical care.

The sponsoring internal organization (Security, ES&H, etc.) is responsible for completing the appropriate review-and-approval process for each type of MOU/MOA; additional review as to legal form/content and contractual compliance is performed by Laboratory Counsel. The Emergency Management Department Head has concurrence on all MOUs/MOAs dealing with external agencies providing onsite emergency response (e.g., Fire Department/Emergency Management) at LLNL and for entities that provide assistance to LLNL personnel in the event of an onsite emergency (i.e., offsite medical facilities). The Security Organization Director has been given the authority to sign/manage all MOUs/MOAs with external Law Enforcement Agencies in support of the Laboratory. However, NNSA/LFO maintains the MOU with the FBI.

The sponsoring internal organization is responsible for keeping the official signature copy of the MOU/MOA. MOU/MOA copies are retained by the sponsoring organization and the Emergency Management Department in accordance with relevant retention schedules. Prior to scheduled renewal dates, MOUs/MOAs are to be reviewed, as appropriate, by the sponsoring internal organization to determine if updating of the MOU/MOA is necessary. The current ERAP, which is maintained in the EPO files, contains a list of the current MOUs/MOAs relating to emergency management.

3.8 Offsite Medical Facilities

Medical support agreements with ValleyCare Health System, Eden Medical Center, and Sutter Tracy Community Hospital, as well as other offsite medical information and protocols, are discussed in Section 3.5.9 and Section 9.0 of this plan.

4 EMERGENCY RESPONSE FACILITIES AND EQUIPMENT

Emergency facilities and equipment support the ERO. Emergency facilities include ACRECC, the EOC, the DOCs, LLNL Health Services, the Alameda County Fire Department, the JIC, the TOC, and their alternate locations, if any.

Equipment includes information management and communication systems that are capable of transmitting required notifications of emergency events and necessary exchanges of information. Various emergency alarm systems are installed to provide Laboratory workers the emergency protective actions that may be required. Transportation equipment, personal protective equipment, consequence assessment equipment and other equipment used for an emergency are specified in Section 4.2.

4.1 Emergency Facilities

4.1.1 Emergency Operations Center

The Site 200 EOC is the coordination and control point for OE-support efforts. It provides a location and a system from which the ED and EMT assess, evaluate, coordinate, and direct emergency support activities. It is the focal point for emergency notifications and reports and for liaison with Federal, State, and local response organizations.

The facility that houses the EOC is constructed with a steel girder frame on a concrete slab foundation to seismic standards level PC-2. The building is protected by an automatic fire sprinkler system. Essential emergency electrical components are connected to emergency power with a back-up diesel generator.

Due to the presence of the EOC, the space within the facility housing the EOC is identified as an emergency facility. This space has been constructed with positive air pressure ventilation and dedicated and separate generator back-up.

The current location for the EOC is a temporary location. DOE HQ has approved a DOE-funded line item acquisition project to relocate the EOC in a permanent facility. This new Emergency Management Facility is anticipated to house the EOC and EPO staff, consolidate life-safety and facility industrial alarms monitoring, and include a potential Alameda County-funded relocation of ACRECC. Construction is scheduled for FY 2016.

4.1.2 Alternate Emergency Operations Center

If habitability or accessibility issues preclude use of the EOC at Site 200, the EOC location will move to the Building 323, Fire House Conference Room. This facility houses communications equipment and redundant consequence assessment resources. In the event that both the EOC and Alternate EOC are deemed uninhabitable, the Emergency Programs Organization maintains a vehicle (Mobile EOC) that is equipped with communications equipment (i.e., radios, laptops, and power supply), EOC documentation, and the Command Board System.

4.1.3 Department Operations Centers

The Laboratory uses Department Operations Centers (DOCs) as technical support centers. These centers are located throughout the Laboratory within organizations that may be called upon by the ED to ensure an adequate level of support for the onsite response and recovery activities. These organizations include the Environment, Safety, and Health Organization DOCs (Environmental; Safety & Health; Health Services Department), Facilities & Infrastructure DOC, the PAO DOC, the Security Organization (Tactical Operations Center), and Site 300. Each DOC maintains the communications and information management capabilities that are necessary to enable connectivity with the EOC. The physical configuration of individual DOCs is the responsibility of each organization, but includes, at a minimum, telephone, fax, WebEOC[®] connectivity, and VERG support.

Site 300 has the capability to operate independently using their DOC in the event of an incident primarily affecting that site. The Site 300 DOC may be activated at the request of the on-scene IC, the Site 300 manager, or the on-duty LEDO. In the event of Site 300 DOC activation, the Site 200 EOC may also be activated at the discretion of the LEDO, should the emergency warrant notifications or additional emergency resources from the Livermore site.

4.1.4 Fire Department

Alameda County Fire Department (ACFD) under contract to LLNS maintains fire department stations at two LLNL locations that are staffed 24 hours-a-day. Staffing consist of a minimum of two three-person engine companies at Site 200 (Station 20) and one four-person company at Site 300 (Station 21).

Alameda County Fire Station 20 houses fire apparatus, firefighters and LLNL Emergency Management Department Fire Protection Division staff. Station 20 is nominally 18,000 square feet in area and was renovated in 1996. The contract with ACFD provides that Station 20 is staffed as a “HazMat” station and all firefighters assigned to that station are certified Hazardous Materials Technicians and all officers are certified Hazardous Materials Specialists.

Alameda County Fire Station 21 houses fire apparatus, firefighters and officers. Station 21 is nominally 6,800 square feet in area and was placed in service in September 1999.

Both facilities are designed to meet Uniform Building Code seismic standards for an important facility. As such, they are designed to remain functional after a major earthquake. Both stations are connected to back-up generators that will provide power during an extended power outage.

The ACFD, in addition to its contract for fire/emergency medical services at LLNL, provides services to approximately 506 square miles with a daytime population of 384,000 people. The department consists of 4 Battalions totaling 30 Fire Stations, 27 Engine Companies, 7 Ladder Truck Companies, a Heavy Rescue Vehicle, Hazardous Materials Response Vehicle, Air/Light Support Unit, and a Dozer all of which are potentially available for response assistance at LLNL.

Additional emergency response resources are also available to LLNL from the Livermore/Pleasanton Fire Department, other nearby ACFD companies, and by activation of the Alameda County Mutual Aid Plan.

Summary of Fire Department Capability Maintained at LLNL:

ACFD Station 20

Located in Building 323 at LLNL Site 200.

Residence for ACFD Battalion Chief #3 (Dublin, LLNL, and eastern Alameda County area).

Two crews (companies). Total of 6 firefighters.*

Hazardous materials team station.

- 3 – Type I Engines
- 1 – 75 Foot Ladder Truck
- 2 – Type III Wildland Fire Engines
- 3 – Type IV apparatus (patrols)
- 1 – Hazardous materials unit
- 2 – Ambulances
- 2 – Incident Command Cars

* Although only two crews are exclusively dedicated to LLNL, three crews (9 firefighters) and three trucks are stationed onsite and are typically available for response.

ACFD Station 21

Located in Building 890 at LLNL Site 300.

Houses one crew (company). Total of 4 firefighters.

- 1 – Type I Engine,
- 1 – Type III Wildland Fire Engine,
- 1 – Type IV apparatus (patrol)
- 1 – Ambulance

4.1.5 Primary and Alternate Joint Information Center

In the event of an OE with potential for offsite health and safety impact, a JIC may be established at the Robert Livermore Community Center or, alternatively, at the Alameda County Office of Emergency Services. Public information officers from LLNL, NNSA/LFO, Federal, State, and local emergency response organizations will come together at the JIC to coordinate and release emergency information to the public through the news media. See Section 10, Public Information.

4.1.6 Alameda County Regional Emergency Communications Center

The ACFD operates the ACRECC located at Site 200, a fully-staffed dispatch facility that is operational 24 hours-a-day, 7 days-a-week. There is a dispatch supervisor and eight dispatchers on duty in ACRECC during a shift. This dispatch center is the primary dispatch center for the ACFD (including onsite Fire Department services at LLNL). A total of more than 50 fire stations are dispatched by ACRECC, which has been accredited as a Center of Excellence by the National Academy of Emergency Dispatch.

The Fire Dispatch activates the LLNL Emergency Voice Alarm (EVA) system, which is the primary means of notification to employees at LLNL during emergencies.

The Fire Dispatch handles over 150,000 fire and medical emergency assistance calls each year from residents of the county and several cities within the county.

Services provided by ACRECC at LLNL include:

- Full Emergency Fire and EMS dispatch services for the Alameda County Fire Department (including stations covering LLNL, SNL/CA, and Lawrence Berkeley National Laboratory), the Livermore/Pleasanton Fire Department, the cities of Alameda and Fremont, and Camp Parks Reserve Force Training Area.
- Dispatch of ambulances providing services to the Alameda County EMS District including Emergency Medical Dispatch pre-arrival instructions for all agencies covered by the EMS District
- Radio interoperability between ground/air ambulances and hospital emergency rooms in Alameda County
- Fire and Rescue Mutual Aid resource coordination and tracking for all of the County of Alameda
- Alameda County-wide fire department equipment status and location tracking through Computer Aided Dispatch (CAD)
- Fire Alarm Monitoring and testing for Camp Parks Reserve Force Training Area, LLNL, SNL/CA and the Lawrence Berkeley National Laboratory

- Dispatching and tracking of LLNL hot work permits, fire alarm and fire suppression shutdowns
- Hospital coordination for multi-casualty incidents and hospital diversions within the County of Alameda
- Call-outs for Alameda County Emergency Medical Services, Alameda County Public Health and Alameda County Environmental Health for all of Alameda County

4.1.7 Medical Facilities/Decontamination Center

LLNL maintains a 25,600 square foot single-story medical facility at the Livermore site designed to meet the health care needs of Laboratory personnel. Professional staff includes physicians, nurse practitioners, registered nurses, an x-ray technician, clinical psychologists, medical assistants, and administrative personnel. Available services include injury and illness treatment, physical examinations and counseling. In addition, the facility includes a decontamination area designed for the treatment of injured or non-injured radiologically or chemically-contaminated personnel. The medical facility maintains an emergency entrance for ambulance traffic and a separate decontamination entry area.

The medical facility is built on a concrete slab floor and is constructed of fire-resistant materials. The building is designed to withstand moderate earthquakes. The entire facility is protected by an automatic fire sprinkler system; automatic fire detection, heating, ventilation, lighting, and overhead communications systems are also provided. Essential emergency power is provided by an emergency generator. In addition, a 5,000-gallon emergency supply of water is maintained.

The decontamination area is divided into three to five rooms for a total of approximately 1,265 square feet, which include: hot/warm/cold dressing rooms, airlocks, showers, supplies and fan rooms. The heating and ventilation is independent from the main HVAC. This system includes a high-efficiency air particulate (HEPA) filter system. In addition, drainage from the decontamination area is collected in a waste retention system.

Adjacent to the medical facility is a large open triage area for emergencies involving large numbers of people. The triage area provides room for staging of different levels of patient care as well as providing easy access for vehicles transporting patients. A storage kiosk has four closets that hold emergency supplies, water, and telephones. Electricity and outside lights have back-up emergency power.

The satellite medical facility at Site 300 provides physical exams and first-aid services. Located adjacent to the Fire Department (Station 21), the medical facility is approximately 1,320 net square feet in area and includes exam rooms, a medical laboratory, and a shower room for minor contamination or chemical spills. The entire facility, built in 1999, is protected by an automatic fire sprinkler system; heating, ventilation, lighting, and overhead communications systems are also provided. The facility is designed to the same seismic standards as Station 21 and shares the

standby generator. Ambulance access is available to the facility, which is staffed with a registered nurse full-time, Monday through Friday.

4.1.8 Security Control Centers

Tactical Operations Center. In the event of a security-based emergency, LLNL Security Organization will activate the PFD TOC, a master coordination and control center for security-related emergency efforts. A complete description of the PFD TOC, as well as its operation and function, is available in the Protective Force Division's Tactical Operations Center Order.

Central Alarm Station. The Protective Force Division's CAS is one of two continually-staffed security consoles that are operational 24 hours-a-day, 7 days-a-week. The CAS is the primary dispatch center for the Protective Force Division. Additionally, the CAS is the primary telephone operator for LLNL during weekday off-hours, weekends, and holidays. To respond to the Laboratory needs, the CAS has the ability to contact qualified technical experts in response to requests from the Laboratory's emergency response program, the DOE National Emergency Response Program, LEDOs, NNSA/DOE, facility points-of-contact, Fire Department, and the Laboratory's EOC.

4.2 Emergency Equipment

During an emergency, LLNL has a variety of specialized equipment located at Site 200 as well as Site 300. This equipment is maintained by both LLNL and its subcontractors.

4.2.1 Communications Equipment

Table 4.1 Communications Equipment

Telephone System	Phones are located at all major buildings, operations areas, and some hazardous waste management units. For emergency reporting purposes, at least one readily-accessible analog telephone is located in each LLNL facility that is routinely occupied. This telephone is in an area that is not subject to being locked. For a larger facility, multiple telephones are placed so that the travel distance from any location in the facility to the nearest telephone is no more than 200 feet (<i>ES&H Manual</i> , Document 22.5, <i>Fire</i> , Section 4.13-Emergency Reporting). An emergency situation onsite can be reported by dialing 911. These calls are answered by Fire Dispatch center and monitored by the PFD CAS. During the workday, emergency medical calls are monitored by the Health Services Department. The telecommunications system in the EOC has classified and unclassified telephones and ring-down service to Fire Dispatch and Site 300. Analog phone lines are also located in the EOC as back up to the primary electricity-based phone system.
Radio Systems	Radios are used by appropriate personnel, such as the Fire Department, Security Organization and the ERO. Incoming and outgoing radio communications are monitored and recorded in Fire Dispatch. The 400 MHz radios are the first line of communication for onsite emergency response. Both sites and all onsite Fire Department apparatus have trunked 800 MHz frequency capability that is used for communication with offsite fire/medical response agencies and provides a back-up system for LLNL responses. Dispatch consoles for fire and security are interconnected via a shared central electronic bank providing dispatchers the ability to communicate with each other.
PA Systems	The site evacuation page systems are used to communicate emergency alarms and instructions to onsite workers. Fire Dispatch makes all announcements on the evacuation page system. Speakers are located throughout operations areas and all major buildings.
Paging Systems	The primary emergency communications system for activation of the ERO members consists of an automated paging system.
Group Page for the Hearing Impaired	Employees who self-identify as hearing-impaired are issued an alphanumeric pager to wear at all times while onsite. This group page will be activated by Fire Dispatch to notify these employees about emergency announcements made onsite.
WebEOC®	WebEOC® is a web-based emergency information system that provides access to information that can be simultaneously shared among emergency response ES&H Teams, decision-makers, and organizations during the planning, response and recovery phase of an emergency. This system is utilized in the EOC, TOC, DOCs, EBCC, JIC and Site 300. DOE/NSA HQ OC has WebEOC® connectivity with LLNL.

Video-Teleconferencing	EPO maintains classified and unclassified video-teleconferencing communications capability. NNSA's Emergency Communications Network/Video-Teleconferencing (ECN/VTC) equipment is located in the support area of the LLNL EOC.
-------------------------------	--

4.2.2 Heavy Construction Equipment

A complete list of heavy construction equipment is available from the Facilities and Infrastructure Department Office, or during an emergency, from the Facilities & Infrastructure DOC.

4.2.3 Decontamination Equipment

The Fire Department, LLNL ES&H teams, LLNL Field Monitoring Teams, and Site Medical Decontamination Facility all have decontamination equipment/supplies available for emergency response.

4.2.4 Alarm Equipment

Employee emergency alarm systems. Employee emergency alarm systems at LLNL consist of the evacuation page and the nuclear criticality accident alarm systems. When an emergency occurs that could endanger the health and safety of personnel, employee alarm systems and protective actions are initiated either locally or site-wide, depending on the extent of the problem.

Radiation alarm signal. The radiation alarm signal is a clarion horn sound. This sound indicates a radiation emergency and is accompanied by rotating red/magenta beacon lights on the outside or inside of buildings that might be affected. Further instructions over the site evacuation page system or from the assembly point leader will be provided following the activation of a radiation alarm.

Fire alarms. Fire alarms are activated by automatic fire protection and/or detection systems such as sprinkler system water flow, smoke and heat detectors, or manual pull boxes. LLNL fire alarms are monitored continuously by ACRECC. Personnel will be notified of the activation of a fire alarm via the EVA system, controlled by ACRECC.

4.2.5 Rescue Team Equipment

The Alameda County Fire Department manages and maintains onsite apparatus and equipment used in firefighting, technical rescue, hazardous material and emergency medical responses. ACFD has the capability to respond to technical rescue incidents at LLNL. An ACFD Engine Company responds to known technical rescue incidents with hydraulic rescue tools, cribbing, and air rescue bags. If the incident were identified as a confined space incident, the HazMat vehicle would also respond, since it carries the specialized confined space rescue equipment. If

the incident were identified as a trench and excavation search and rescue, ACFD will respond with their Heavy Rescue Unit that is housed at an offsite ACFD station.

4.2.6 Sanitation, First Aid and Survival Equipment

Assembly points are equipped with basic first-aid supplies organized for response to a multi-casualty incident based upon the Simple Triage and Rapid Treatment (START) system. There are approximately 100 boxes located throughout the Livermore site and Site 300.

4.2.7 Transportation Equipment

The Fire Department operates three paramedic-staffed ambulances 24 hours-a-day, 7 days-a-week basis; two ambulances service the Site 200, and one services Site 300. Mini-motor coaches, operated by the Laboratory Fleet Management Department, can be used to transport injured employees if requested by the on-scene IC or the ED.

4.2.8 Personal Protective Equipment

Personal protective equipment is maintained by the ES&H Directorate and housed at various locations throughout the site. Personal protective equipment for the Fire Department meets National Fire Protection Association (NFPA) standards.

4.2.9 Hazardous and Radioactive Material Monitoring Equipment

Air particulate samplers, air vapor samplers, hand-held combustible gas analyzers, portable radiation detectors, and other equipment are maintained onsite by the ES&H Directorate to respond to releases of hazardous materials.

4.2.10 Damage Containment Equipment

The Emergency Management Department maintains some containment equipment, and other equipment is staged in the Laboratory corporation yard. During an emergency, information about specific equipment is available from the IC and the Facilities & Infrastructure DOC.

4.2.11 Fire Department Equipment

The Alameda County Fire Department manages and maintains LLNL owned apparatus and equipment used in firefighting, technical rescue, hazardous material and emergency medical responses at LLNL. Inventories are available at the Fire Department. Apparatus and equipment meet NFPA standards.

4.2.12 Emergency Power Equipment

Buildings containing systems that may be needed during a power outage are supplied with emergency generators. Portable generators are available through both the Emergency Management Department and Facilities & Infrastructure Directorate.

4.2.13 Logistic Support Equipment

Logistic support equipment is maintained and supplied by the various EMT organizations and is available through the IC or DOCs. Additionally, the EMD maintains facility key plans and run cards for all facilities. Maps to aid emergency responders are available in emergency response facilities, in plans/procedures, and on some emergency response vehicles.

4.2.14 Consequence Assessment Equipment

The consequence assessment workspace in the EOC has two PCs with current versions of plume projection software (Hotspot, EPIcode, and ALOHA computational models) for calculating airborne release consequences associated with hazardous materials incidents. The atmospheric release modelers in the EOC have direct connectivity to NARAC, which is located at LLNL, and it is used as the secondary computational model for OEs. There is an additional PC for monitoring atmospheric (weather) data and WebEOC[®] data. There is also a dedicated ring down telephone between the EOC and Safety & Health DOC modeling workspaces. Additionally, a laptop computer with the computational models is located in the EOC's consequence assessment workspace and is capable of providing backup.

4.2.15 Contamination Assessment Equipment

Bioassay and whole-body counting equipment for radiological contamination assessment is provided by the Radiation Protection Functional Area.

4.2.16 Meteorological Monitoring Equipment

LLNL has two meteorological monitoring towers, one located at each site. SNL/CA has an additional tower that can be monitored by LLNL. In addition to LLNL's internal website for meteorological conditions, a dedicated PC located in the Safety & Health DOC directly polls and monitors these towers and serves as a redundant processor of meteorological data at LLNL.

5 EMERGENCY CATEGORIZATION AND CLASSIFICATION

This section provides an overview of the process used for categorization and classification of OEs. Specific actions and criteria for categorization and classification of OEs are described in EPIP-41, *Emergency Categorization and Classification*, and EPIP-42, *Emergency Management Duty Officer Procedure*.

In accordance with DOE requirements, OEs are defined as major, abnormal or unplanned events or conditions that cause or have the potential to cause serious health and safety or environmental impacts. OEs are characterized by:

- A requirement for resources from outside the immediate/affected area or local event scene to supplement the initial response, and
- A requirement for time-urgent notifications to initiate response and/or protective actions activities at locations beyond the event scene.

Most events at LLNL that involve an emergency response (fire, medical, HazMat, etc.) are not OEs. The event severity/complexity and the expected or required response determine if an OE declaration is warranted.

OEs involving the actual or potential airborne release of hazardous materials from an onsite facility or activity may also require further classification (i.e., an Alert, Site Area Emergency, or General Emergency), based on the measured or predicted radiation dose or hazardous material concentration at specific locations (e.g., the site boundaries).

5.1 Definitions

5.1.1 OE Categories

An OE may be *categorized* for the following types of emergencies:

- Health and Safety
- Environmental
- Safeguards & Security
- Hazardous Materials
- Offsite emergency affecting LLNL
- Fire, emergency medical, mass casualty or other emergency at the discretion of the EMDO, LEDO, or ED

Of these categories, Hazardous Materials OEs may be further classified as Alert, Site Area Emergency, or General Emergency. Safeguards & Security OEs may be further classified based on the potential for a release of hazardous materials and the projected consequences. If an OE does not involve hazardous material(s) or meet the criteria for an Alert, Site Area Emergency, or General Emergency, it is classified as an OE Not Requiring Further Classification. Additional detail may be found in EPIP-41, *Emergency Categorization and Classification*.

5.1.2 Hazardous Materials OE Classifications

Hazardous Materials OEs may be *classified* in order of increasing severity.

5.1.2.1 Alert

An Alert shall be declared when events are predicted, in progress, or have occurred that result in one or more of the following situations:

- An actual or potential substantial degradation in the level of control over hazardous materials (radiological and non-radiological) such that the radiation dose from any release of radioactive material or concentration in air from any release of other hazardous material is expected to have significant impacts (Protective Action Guide – PAG or Acute Exposure Guideline Level – AEGL₆₀-2 exceeded) at or beyond 30 meters from the release point, but not at or beyond 100 meters and/or the facility boundary.
- An actual or potential substantial degradation in the level of safety of a facility or process that could, with further degradation, produce a Site Area Emergency or General Emergency.

5.1.2.2 Site Area Emergency

A Site Area Emergency shall be declared when events are predicted, in progress, or have occurred that result in one or more of the following situations:

- An actual or potential major failure of functions necessary for the protection of workers or the public. The radiation dose from any release of radioactive material or concentration in air from any release of other hazardous material is expected to have significant impacts (PAG or AEGL₆₀-2 exceeded) at or beyond the facility boundary, but not at or beyond the nearest site boundary.
- An actual or potential major degradation in the level of safety or security of a facility or process that could, with further degradation, produce a General Emergency.

5.1.2.3 General Emergency

A General Emergency shall be declared when events are predicted, in progress, or have occurred that result in one or more of the following situations:

- An actual or imminent catastrophic reduction of facility safety or security systems with potential for the release of large quantities of hazardous materials (radiological or non-radiological) to the environment.
- The radiation dose from any release of radioactive material or concentration in air from any release of other hazardous material is expected to have significant impacts (PAG or AEGL₆₀₋₂ exceeded) at or beyond the site boundary.

A description of the PAG and AEGL criteria is provided in Section 7 of this EPlan and in EPIP-71, *Emergency Protective Actions and Reentry*.

5.2 Criteria for Operational Emergencies Not Requiring Further Classification

In some cases, an event may occur that, while it does not meet the criteria for a classifiable OE, does pose a major concern for personnel health and safety, environmental impact, or security. In general, an OE Not Requiring Further Classification is defined as either a hazardous materials event that does not meet the criteria for an Alert, or a health and safety, environmental, security, hazardous biological agent/toxin, or offsite transportation event.

Examples of criteria used to define OEs Not Requiring Further Classification are provided in the table below.

Table 5.1 Potential Indicators for OEs Not Requiring Further Classification

OE Category	Indicators
Health and Safety	<ul style="list-style-type: none"> • Discovery of radioactive or other hazardous material contamination from past NNSA operations that is causing or may reasonably be expected to cause uncontrolled personnel exposures exceeding protective action criteria. • An offsite hazardous material event not associated with LLNL operations that is observed to have or is predicted to have an impact on an LLNL site such that protective actions are required for onsite LLNL workers. • An occurrence that causes or can reasonably be expected to cause significant structural damage to LLNL facilities, with confirmed or suspected personnel injury or death or substantial degradation of health and safety. • Any facility evacuation in response to an actual occurrence that requires time-urgent response by specialist personnel, such as hazardous material responders or mutual aid groups not normally assigned to the affected facility. • An unplanned nuclear criticality resulting in actual or potential facility damage and/or release of radioactive material to the environment. • Any non-transportation-related mass casualty event. • Activation of the LLNL Disaster/Self-Help Plan.
Environment	<ul style="list-style-type: none"> • Any actual or potential release of hazardous material or regulated pollutant to the environment, in a quantity greater than five times the reportable quantity specified for such material in 40 C.F.R. 302.

	<ul style="list-style-type: none"> Any release of greater than 1000 gallons (24 barrels) of oil to inland waters, or a quantity of oil that could result in significant offsite consequences
Security	<ul style="list-style-type: none"> Actual unplanned detonation of an explosive device or a credible threatened detonation. An actual terrorist attack or sabotage event involving a site/facility or operation. Kidnapping or the taking of hostage(s) involving a site/facility or operation. Damage or destruction of a site or facility by natural or malevolent means sufficient to expose classified information to unauthorized disclosure.
Hazardous Biological Agents/Toxins	<ul style="list-style-type: none"> Any actual or potential release of a hazardous biological agent or toxin outside of the secondary barriers of the biocontainment area.
Offsite Transportation Activities	<ul style="list-style-type: none"> The radiation dose from any release of radioactive material or the concentration in air from any release of other hazardous material is expected to require establishment of an initial protective action zone. Failures in safety systems threaten the integrity of a nuclear weapon, component, or test device. A transportation accident that results in damage to a nuclear explosive, nuclear explosive-like assembly, or Category I/II quantity of special nuclear material.

5.3 Emergency Action Levels

5.3.1 Emergency Action Levels Description

Emergency Action Levels (EALs) are specific, pre-determined, observable criteria used by the EMDO to recognize and identify that the incident is an OE. Once this discovery is made, EALs are used by the Battalion Chief, PFD IC, EMDO, or ED to help determine appropriate protective actions for onsite personnel and protective action recommendations for offsite populations. For each facility for which an Alert, Site Area Emergency or General Emergency is defined, the EALs describe on-scene indicators, list the distance to the nearest site boundary, and describe the conditions and indicators upon which the classification is based, including the maximum distances at which the PAG or AEGL₆₀ values would be observed. EALs are developed for potential OEs, including radiological and non-radiological releases, terrorism and sabotage (malevolent acts), fires, explosions and natural phenomena.

EALs are developed from scenario input data and results provided in the facility EPHAs. Trigger points for hazardous material EALs are specific initiating conditions/indicators, such as alarms and/or direct observations of spills or fires, that are based on the potential to release accident-specific source terms analyzed in EPHAs. The EPHAs also provide a quantitative estimate of the consequences of each EAL at specific receptor locations, such as the facility boundary, site boundary, and the maximum distance at which the PAG or AEGL₆₀ is exceeded. This last estimate allows determination of the emergency classification associated with the release.

EALs in use at LLNL also allow for discretionary implementation by the responsible EMDO.

Additionally, the EMDO will use the North America Emergency Response Guidebook (or “Orange Book” – latest edition) for categorization and classification of transportation-related HazMat events; and the NNSA/Office of Secure Transport (OST) Protective Action Recommendation (PAR) cards similarly for NNSA/OST shipment events.

The EMDO Handbooks are updated when EALs change due to revisions to EPHAs. Locations of controlled copies of the EAL books may be found in EPO files.

Additional detail regarding EAL development and use may be found in EPIP-61, *Emergency Planning Hazards Survey*; EPIP-62, *Emergency Planning Hazards Assessment Documentation for Transportation Events*; EPIP-63, *Emergency Planning Hazards Assessment*; and EPIP-41, *Emergency Categorization and Classification*.

5.3.2 Use of Emergency Action Levels

All LLNL station Captains and Battalion Commanders are trained on EAL information, including EAL indicators, conservative protective actions, and when to contact the EMDO to inform him/her that an Operational Emergency might be in progress. EAL information is included with Fire Department run cards brought to the event scene. Upon arrival at an incident scene, the Battalion Chief or Captain gathers information about the incident and contacts the EMDO, who consults with the Battalion Chief to determine whether or not the incident is an OE based on the applicable emergency action levels. The Battalion Chief or Captain should issue conservative protective actions as prescribed in EALs for onsite populations, and should consider implementing protective actions for offsite populations if prescribed in EALs for General Emergency events.

In the unexpected event that an Incident Commander issues protective actions that are not as conservative as prescribed by the EAL, it is the duty of the EMDO to advise the IC on the default EAL protective action distances for both onsite and offsite populations. Unless the IC believes the default guidance would cause more harm than good, the most conservative protective actions should always be implemented onsite. For offsite populations, Laboratory authorities can only make recommendations on what protective actions to implement, based on default guidance provided in EALs and consequence assessment information. It is the responsibility of the Alameda County Fire Department IC or local law enforcement to ensure offsite residents are properly protected.

If a release or potential release of radiological or non-radiological hazardous material poses a threat to workers and/or the public, the EMDO may categorize the event as an Operational Emergency and further classify the event as an Alert, Site Area Emergency, or General Emergency, depending on the EAL. The appropriate categorization/classification level will be declared following event recognition/identification/discovery using the applicable emergency action levels. For security-related incidents, the PFD Security Incident Commander gathers information about the incident and contacts the SDO, who consults with the EMDO to determine whether or not the incident is an OE based on the applicable emergency action levels.

Under Unified Command, declaration of an OE may be warranted based on law enforcement or security concerns not involving or potentially involving hazardous materials. In this case, the EMDO declares the OE and determines the categorization and classification based on a description of the situation provided by the SDO. Further classification of a Security OE as an Alert, Site Area Emergency, or General Emergency is based on the potential for a release of hazardous materials and the projected consequences. If the event does not involve hazardous materials or if the projected consequences do not meet the criteria for a classifiable OE, the event is declared an OE Not Requiring Further Classification. The Protective Force Division procedures describe notification of Security Organization management and the Battalion Chief. These notification guidelines are provided for in the Protective Force Division's emergency contingency plans.

Depending upon the event, the SDO, in consultation with NNSA/LFO, may recommend implementation of a Security Condition (SECON) level commensurate with the threat posed to LLNL by the event. Actions and criteria for implementing a security condition level are described in the LLNL *Security Condition (SECON) Implementation Plan*.

As described in Section 2.4 of the EPlan, the EMDO activates the EOC and DOCs, based on event classification and in accordance with EPIPs (see Table 2.2). Activation of all facilities is automatic for General Emergencies. Activation of all facilities, except the JIC (LEDO discretion in consultation with the PAO Manager), is automatic for Site Area Emergencies. For other emergency events, OEs at the Alert level, or OEs Not Requiring Further Classification, activation is based on LEDO guidance.

6 EMERGENCY NOTIFICATIONS AND COMMUNICATIONS

Protocols are in place for the prompt initial notification of Laboratory emergency response personnel, onsite personnel, and offsite emergency response personnel/organizations including LLNS parent organizations, NNSA/LFO, NNSA/DOE HQ, and other Federal, State, and local organizations. Communication systems are also in place to provide for continuing effective communication among the EROs, both offsite and onsite, throughout an OE.

6.1 Notifications

6.1.1 Offsite Agency Notification

The EMDO has the responsibility for offsite notifications until the EOC has been declared operational and the on-duty LEDO has assumed the role of ED and accepts responsibility for all subsequent notifications. The offsite agencies in the following list will be notified within fifteen (15) minutes of the declaration of an OE involving hazardous materials (Alert, Site Area Emergency, or General Emergency). In an OE not involving hazardous materials, offsite agency notifications will be accomplished within thirty (30) minutes.

Offsite officially required notifications are made to:

For all Operational Emergencies:

- NNSA/LFO duty officer
- DOE/NNSA HQ Operations Center – Watch Office
- Alameda County Sheriff Department Dispatch Center (San Leandro, CA)
- Alameda County Sheriff Department OHS & ES (Dublin, CA)
- Alameda County Regional Emergency Communications Center (LLNL)
- State of California Governor's Office of Emergency Services Warning Center (Mather, CA)

Site 200 (Livermore site) Operational Emergencies also include:

- City of Livermore Police Department Dispatch Center
- Livermore/Pleasanton Fire Department Dispatch Center
- Sandia National Laboratories/California Security Dispatch Center

Site 300 Operational Emergencies also include:

- City of Tracy Fire Department Dispatch Center
- City of Tracy Police Department Dispatch Center

- San Joaquin County Sheriff Department Dispatch Center
- San Joaquin County Sheriff Department OES

Follow-up notifications will be provided on an hourly basis (from the previous notification), or whenever the classification of the emergency event changes, protective action recommendations are revised, or the emergency has been terminated.

Each of the agencies listed above has provided primary and back-up numbers to be called for initial notifications in addition to facsimile numbers to receive follow-up hard copy. These numbers are reviewed and verified on a quarterly basis. To ensure consistency of the information provided, notifications are made using the “LLNL Emergency Notification Form.”

Initial notifications are made by the EMDO using the *Communicator! NXT* system. The EMDO will fill out the Emergency Notification Form, and then read the information into the *Communicator! NXT*, which sends the information to all offsite agencies as well as the EOC Coordinators. If the *Communicator! NXT* malfunctions, the EMDO can verbally provide the notification information to the Occurrence Reporting Duty Officer, or EOC staff (Notifications Officer), and it can then be manually transmitted to designated agencies.

After the EOC has been declared operational, the ED assumes responsibility for subsequent notifications, which are normally handled by the Notifications Officer. Offsite agencies should initially be notified via the *Communicator! NXT* system. In addition, the EMDO should provide an additional prompt oral communication to DOE HQ OC following any emergency declaration, followed by telefax and/or e-mail. If for any reason, the EMDO fails to make prompt oral notification to DOE HQ OC, the Liaison Officer or Notification Officer will make the initial prompt oral notification to DOE HQ OC following EOC activation, based on information provided on the initial Emergency Notification Form. The Liaison Officer also establishes communications with offsite EOCs. Once initial verbal notifications are completed, the Notifications Officer makes all follow-up notifications to DOE HQ OC and is responsible for overseeing the notification process within the EOC to ensure further notifications and/or updates are completed in accordance with EPIP-51, *Emergency Notifications*.

When notified of an emergency at LLNL, the Alameda County Sheriff’s OHS & ES notifies other appropriate State of California entities. OHS & ES also coordinates and authorizes use of the State of California’s emergency broadcast system.

6.1.2 Onsite Notifications

When a potential OE not involving hazardous materials occurs, the IC is responsible for notifying emergency response personnel and potentially impacted onsite personnel of initial protective actions. The Fire Department Battalion Chief, or Security Duty Officer for security events, is required to contact the EMDO, who may categorize the event as an OE and initiate notifications, including appropriate offsite authorities and the LEDO.

If the OE involves or has the potential to involve significant quantities of hazardous materials, the EMDO may further classify the event as an Alert, Site Area Emergency, or General Emergency, brief the LEDO, call-out the ERO, and initiate offsite agency notifications. The LEDO notifies the Director's Office and other applicable senior LLNL and LLNS management in accordance with notification policies and protocols.

If a Site Area Emergency or General Emergency has been declared, the entire ERO and supporting emergency response facilities, with the exception of the JIC (at Site Area Emergency), will be activated. If an OE Not Requiring Further Classification or Alert has been declared, the level of activation will be determined by the LEDO/ED per Table 2.2. The ERO will be called out via *Communicator! NXT*, a PC-based, digital system that uses telephones to relay appropriate event information and activate pagers. A manual call-out back-up system, utilizing the Occurrence Reporting Duty Officer, is also available. The EMDO has the responsibility for offsite notifications until the EOC has been declared operational and the on-duty LEDO has assumed the role of ED and accepts responsibility for all subsequent notifications.

6.1.3 Departmental Radiological Emergency Response Assets

When there is a need for offsite DOE/NNSA national assets to support an onsite emergency response, the ED will make a request through the NNSA/LFO EMT or duty officer. Position checklists for the LFO Emergency Manager (LFO 151.1.1, *Emergency Manager*) and the LLNL Emergency Director (EPO-Checklist-03, *Emergency Director*) ensure requests for national assets are properly coordinated through LFO when the EOC is activated. If an onsite emergency is not in progress, requests for national assets will be directed to the LEDO, who will forward the request to the LLNL Deployment Point of Contact (POC) per the current version of the LEDO Quick Reference Handbook. The LLNL Deployment POC coordinates the request with LFO, who approves or denies the request.

6.1.4 National Nuclear Security Administration Field and Headquarters Operations Center Notifications

The EMDO has the responsibility for offsite notifications until the EOC has been declared operational and the on-duty LEDO has assumed the role of ED and accepts responsibility for all subsequent notifications. Upon categorization of an OE and/or declaration of a classified emergency, the NNSA/LFO duty officer and the DOE/NNSA HQ OC are notified via telephone, telefax and/or e-mail, as a part of the offsite notification process per EPIP-51, *Emergency Notifications*. They will also be notified via *Communicator! NXT* as a back-up. The NNSA/LFO duty officer and DOE/NNSA HQ OC will continue to receive subsequent notifications and updates throughout the emergency.

6.2 Communications

Emergency communications is defined as the ability of emergency responders to exchange information via data, voice, and video as authorized, to complete their missions. Emergency responders at all levels must have interoperable and seamless communications to manage emergency response, establish command and control, maintain situational awareness, and function under a common operating picture for a broad scale of incidents.

Emergency communications consists of three primary elements:

1. **Operability** – The ability of emergency responders to establish and sustain communications in support of mission operations.
2. **Interoperability** – The ability of emergency responders to communicate among jurisdictions, disciplines, and various levels, using a variety of frequency bands, as needed and as authorized. System operability is required for system interoperability.
3. **Continuity of Communications** – The ability of emergency response agencies to maintain communications in the event of damage to or destruction of the primary infrastructure.

The LLNL Emergency Communications Plan describes the communications systems, procedures, and protocols to establish the three primary elements.

6.2.1 Secure Communications

The LLNL EOC has the capability for secure communications using a secure telephone unit and secure facsimile for connectivity to DOE/NNSA HQ OC. NNSA's Emergency Communications Network/Video-Teleconferencing equipment is located in the support area of the EOC.

6.2.2 Communications with Offsite Agencies

The primary communications system for official initial offsite notification is *Communicator! NXT*. This is a PC-based digital communications system. Once the EOC is operational, telefax is the primary means of offsite notification and *Communicator! NXT* becomes the back-up.

The National Warning System (NAWAS) is the special purpose telephone system that provides the capability for selective dissemination of warnings and emergency information nationwide, within Federal Emergency Management Agency (FEMA) Regional areas, within National Weather Service (NWS) regional forecast areas, and within statewide areas. The primary National Warning Center (NWC) is the FEMA Operations Center located at the Mt. Weather Emergency Assistance Center in Berryville, Virginia.

Although NAWAS is a national system, the day-to-day operation is under the control of individual states. In California it is known as the California Warning Alert System (CALWAS)

and is operated by California Office of Emergency Services. LLNL is an official NAWAS/CALWAS station and the Protective Force Division's Central Alarm Station (CAS) is the monitoring and communication point for NAWAS/CALWAS at LLNL. A national and state test is conducted daily on NAWAS/CALWAS and its operational status is checked and logged by the CAS.

During an emergency warning alert, the Cal OES or the national center operator will announce which agencies, such as LLNL, are required to listen. The CAS operator then obtains the information directed at LLNL and notifies ACRECC. The CAS only notifies Cal OES of LLNL emergency conditions via NAWAS/CALWAS if instructed by the IC, LEDO, SDO, or PFD supervisor.

6.2.3 Other LLNL Communications Systems

Communications requirements fall into three general categories:

- Emergency instructions to onsite populations at LLNL
- Initial notifications to members of the ERO
- Operational communications between emergency response facilities (e.g., EOC, DOCs) and field response elements.

The following systems are utilized to satisfy these requirements:

- **Phone Systems:** Telephones, Cell Phones, Satellite Phone, Blackberry's, iPhones, and Fax Machines.
- **Electronic Systems:** Computers, Email, *Communicator! NXT* and WebEOC.
- **Radio Systems:** 400 MHz trunk radio system, LLNL pager system, and Ham Radios (VERG).

The dedicated Emergency Voice Alarm (EVA) system is the primary tool used to notify Site 200 workers of expected protective actions and additional general information. Site 300 notifications are through the administrative building page system or via 400 MHz radio system.

Another communications system used for both sites includes a dedicated emergency information telephone message system (4-LLNL).

The LLNL trunk radio system through the Fire Dispatch Center provides for communication among emergency responders and from the incident scene to the IC and the Battalion Chief. The EOC has the capability of monitoring these radio communications.

When the emergency response facilities are operational, communications between the EOC and the DOCs, including the JIC, will be made primarily via the WebEOC® and Laboratory telephone system. VERG, portable cellular/satellite telephones, and handheld 400MHz radios may be used as backup communications tools for inter-facility communications.

Communications systems or networks are maintained in a state of readiness through scheduled operational tests. These tests and their periodicity, as well as communications issues identified during actual events, drills and exercise, are documented in After Action Reports (AAR) and tracked to resolution.

7 CONSEQUENCE ASSESSMENT

Consequence assessment is the process used to evaluate the impacts of a release of radioactive or other hazardous materials. Consequence assessment at LLNL is an ongoing process that begins with recognizing that an incident has occurred, continues through various phases of response to the incident, and concludes with cleanup and remediation. As such, the process includes performing timely initial assessments of plume projection consequences necessary to support initial decisions and the continuous process of refining those initial assessments as more information and resources become available.

7.1 Consequence Determination

Consequence assessment is conducted in three phases during the response to a hazardous material incident:

- Upon recognition of the emergency, tabulated results of consequence calculations from the appropriate EPHAs and related EALs provide guidance in making an initial worst-case estimate of the consequences. These documents are described in EPIP-61, *Emergency Planning Hazards Survey*, EPIP-62, *Emergency Planning Hazards Assessment Documentation for Transportation Events*, and EPIP-63, *Emergency Planning Hazards Assessment*.
- The timely initial worst-case assessment is performed in the initial stage of response when requested by the LEDO/ED. The consequence assessment team verifies the consistency of the EAL-based consequences by reconstructing the modeling of the EAL-based scenario. The model is then run again, using available event and meteorological information to project event-specific plume consequences.
- The continuous assessment phase follows the timely initial assessment and continues throughout the response and mitigation. Modeling performed in this phase is supplemented by refined source term data gathered by the EOC, revised meteorological data, and data gathered by the FMTs deployed by the Safety & Health DOC. This will ensure that, as the event unfolds, changes in variables associated with consequence assessment are addressed and updated.

7.1.1 Initial Consequence Assessment

When there is an incident or the imminent potential for an incident that might release significant quantities of radioactive materials or toxic chemicals, the EMDO, with guidance from the EALs in the EMDO Handbook, makes a preliminary consequence assessment. The EALs provide input

for event detection, recognition, categorization and classification. Based on the assessment, the EMDO will consult with the Battalion Chief or Security Duty Officer and:

- Initiate protective actions, if warranted, for emergency responders and affected onsite facilities and personnel
- Recommend protective actions, if appropriate, to offsite agencies
- Ensure appropriate on-scene evaluations and recommendations are communicated to the LEDO/ED
- Confer with the LEDO/ED on emergency classification and the need for offsite notification

The initial assessment of the EMDO may be augmented by the consequence assessment team based on EAL data evaluation from predefined incident scenarios for the facility and/or operations described in the associated EPHA.

7.1.2 Timely Initial Assessment

Within about the first thirty minutes of the response, assessments should be performed leading to an estimate of the upper bound of the potential consequences of the release. If this assessment is completed in a timely manner, it may provide additional data for determining the appropriate classification of the OE. To aid in the timeliness of information, the results should be based upon pre-calculated results and upon simplified calculation methods including computer codes and calculated values. These actions may be initiated by first response personnel and may be augmented with the continuous assessment process once the consequence assessment team and ERO staffs are available.

7.1.3 Continuous Assessment

Continuous consequence assessment consists of re-evaluation as additional information is gathered and emergency conditions become better defined. This process is ongoing through recovery and return to normal operations in accordance with EPIP-71, *Emergency Protective Actions and Reentry*, and EPIP-91, *Emergency Termination and Recovery*. This process ensures that the data are available for decision-makers to ensure that appropriate protective actions are maintained and adjusted as needed. The mitigative or ameliorative progress is monitored and communicated to the affected parties. This process is similar to the timely initial assessment process, but is cyclical, with increasing levels of sophistication in the analysis tools, input accuracy, technical expertise, and field monitoring feedback. Additionally, sensitivity analyses (such as release impacts from changes in atmospheric conditions) may be performed to determine which potential indicators could trigger recasting of decisions related to protective actions. Consequence assessment during recovery and planning for the return to normal operations can include continued environmental sampling to verify the effectiveness of restoration activities. Consequence assessment is also performed to minimize the further spread

of hazardous materials. Final measurements demonstrate that consequences from the hazardous materials release are reduced to acceptable levels, or specific areas isolated, during recovery.

7.2 Coordination

The ED is responsible for coordinating with Federal, State, and local organizations to ensure accurate and timely consequence assessments, determinations, and coordinated responses. This coordination is outlined in EPIP-111, *Activation and Operation of the Emergency Operations Center*. The EOC, supported by the DOCs, can provide the expertise to locate and track hazardous materials; estimate the integrated impact of hazardous materials released onsite, offsite and into the environment; and locate and recover materials, especially those with national security implications.

7.3 Emergency Planning Hazards Assessments

As an integral part of emergency preparedness, hazards surveys and assessments are performed and updated as needed. EPIP-63, *Emergency Planning Hazards Assessment*, discusses the requirements, processes, and procedures used to perform and document the facility EPHAs that form the quantitative technical bases for the LLNL emergency management program. EPIP-62, *Emergency Planning Hazards Assessment Documentation for Transportation Events*, describes the hazards assessment process for LLNL transportation events.

8 PROTECTIVE ACTIONS AND REENTRY

The Laboratory has procedural actions for protection of onsite personnel and recommendations to offsite agencies in the event of an OE. Protective Action Criteria (PAC) are levels of hazardous material that, if observed or predicted, indicate action is needed to prevent or limit exposure to the hazard. These actions are noted on the Emergency Action Levels (EALs) that have been developed for each EPHA facility at LLNL.

The IC will direct initial protective measures for affected onsite personnel based on the initial size-up and information provided to the IC. The IC and EMDO will then validate that the initial protective measures are consistent with the protective actions contained in the applicable EAL. If the EAL indicates that a hazardous material plume may extend beyond the site boundary or that PAC may be exceeded offsite, the EMDO will make protective action recommendations to the Alameda County Fire Department Battalion Chief and to offsite agencies through procedure EPIP-51, *Emergency Notifications*:

- Stand by for further information from LLNL
- Shelter the public in suggested areas per local jurisdictional procedures
- Evacuate the public in suggested areas per local jurisdictional procedures

Protective actions for the public may be ordered only by public officials or their designees (e.g., Alameda County Fire Department, Livermore Police Department); the EMDO/ED will make recommendations only.

8.1 Protective Action Criteria

8.1.1 Protective Action Guides (Radiological)

The PAC for radiological materials are contained in the Environmental Protection Agency's (EPA) *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents*, EPA 400-R-92-001 (May 1992). The protective action guide (PAG) is the value that is used to classify OEs and to initiate appropriate protective actions.

The PAG is defined in EPA 400-R-92-001 as the projected 50-year total effective dose equivalent from exposure and intake during the early phase of the event. The total effective dose equivalent is calculated as the sum of the effective dose equivalent from external source exposure and the committed effective dose equivalent from inhalation during the early phase of the event. Consistent with Table 2-1 of EPA 400-R-92-001, a PAG of one to five rem is typically assumed. At LLNL, the lowest value, one rem, is used for doses resulting from direct radiation or the uptake of materials that have a physical or biological half-life that is short compared to fifty years (for example, tritium). Five rem is used for doses resulting from the uptake of long half-life materials (for example, plutonium).

The value used for the threshold for early lethality for a radiological release is a projected total effective dose equivalent of 100 rem. The intent is to approximate the dose at which sensitive groups within any large population would begin to show an increase in mortality.

Postulated radiological release scenarios and the PAGs used are described in the EPHAs.

8.1.2 Acute Exposure Guideline Levels (Chemical)

The PAC for chemical materials are listed by the temporary emergency exposure limit (TEEL), and published and maintained on the DOE chemical safety website. These values for airborne concentrations of released materials are based on requirements in the Occupational Safety and Health Administration, EPA, and other exposure limits. Sixty-minute final and interim acute exposure guideline levels (AEGL_{60s}) – as a first choice, and emergency response planning guidelines (ERPGs) developed by the American Industrial Hygiene Association – as a second choice, have been incorporated into the TEEL list, where available. The following three reference value levels are defined for each material as follows:

- AEGL₆₀₋₁/ERPG-1/TEEL-1 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing other than mild transient adverse health effects or perceiving a clearly defined objectionable odor.
- AEGL₆₀₋₂/ERPG-2/TEEL-2 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair their abilities to take protective action.
- AEGL₆₀₋₃/ERPG-3/TEEL-3 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing life-threatening health effects. This is considered the threshold for early lethality for chemical releases.

AEGL₆₀₋₂, ERPG-2, or TEEL-2 is used for the classification of emergency events and the initiation of protective actions at LLNL.

Postulated chemical release scenarios are also described in the EPHAs.

8.2 Records

Declaration of an OE may result in activation of the LLNL EOC. The Emergency Management Department's EPO staff maintains records of information and actions relating to the activation of the EOC during an emergency. As part of these records, an After Action Report is prepared by the EMC Coordinator. This report will be due in conjunction with the Final Occurrence Report (see DOE Order 232.2, *Occurrence Reporting and Processing of Operations Information*). Refer to EPIP-91, *Emergency Termination and Recovery*, for After Action Report format.

8.3 Protective Action Implementation

8.3.1 Objective

The primary objective of protective actions is to limit individual doses or exposures. In the short-term, this may be accomplished by taking action (e.g., shelter-in-place) to keep exposure levels below the thresholds for severe early health effects. In the longer term, additional actions may be required to reduce or avoid additional exposure (e.g., evacuate populations, which may cause temporary exposure to a higher plume concentrations than would occur during shelter-in-place, for the purpose of avoiding a higher dose over an extended period of time, thereby producing a positive net benefit).

The overall risk to workers and the public should be limited, to the extent practicable, by reducing the population or collective dose (or exposure).

Protective actions, when implemented individually or in combination, accomplish this objective. However, they are not limited to sheltering and evacuation.

Following implementation of initial protective actions and prior to activation of the EOC, the IC and EMDO should continuously evaluate the situation, including operational and weather conditions, to determine if modifications to the initial protective actions are warranted. After the EOC becomes operational, the IC retains responsibility for protecting *only* what is defined as the incident scene. Any onsite areas outside of the incident scene fall under the protection of the Emergency Director. The IC and the ED must therefore have a conversation to define and agree on what falls within the incident scene onsite. This decision should be briefed to responders at the scene and to the ERO. Protection of offsite areas always remains the responsibility of the IC; however, it is the duty of the ED to issue protective action recommendations to the IC, as well as to offsite authorities.

8.3.2 Onsite Protective Actions

Evacuation and/or sheltering are likely to be the most effective protective actions that can be taken to minimize risk to workers close to the event scene. Workers closest to the scene of an emergency will probably be subjected to the highest risk from the effects of the accident conditions with the least warning time. Depending on the particular circumstances of the emergency, either method of protective actions, or a mix of the two, may be implemented to avoid or minimize the exposure of individuals to the hazardous materials released.

Sheltering may be the appropriate protective action when:

- Workers have access to a facility that provides protection
- The dose or exposure will be less than that associated with evacuation
- It places workers in a position where additional instructions can be rapidly disseminated
- Rapid evacuation is impeded
- Plume arrival is imminent

Actions performed to shelter include closing doors and windows, turning off external make-up air for heating, ventilation, and air conditioning (HVAC) if possible, and remaining indoors until an “all clear” is issued by the IC or ED.

Evacuation may be appropriate when:

- No facility protection is available or facility habitability is uncertain
- Concentrations may exceed the threshold for early lethality (100 rem or AEGL₆₀₋₃/ERPG-3/TEEL-3)
- Plume arrival is not imminent

Facility-specific evacuation plans and routes are included in the corresponding Facility Safety Plans (FSPs), FLEPs, and/or Disaster/Self-Help Plans. The Facility-Level Base Program and Disaster/Self-Help Program are administered by the Emergency Programs Organization. Per Document 22.1, *Emergency Preparedness and Response*, of the *ES&H Manual*, facility management is responsible for the development and maintenance of plans required by the Facility-Level Base Program and Disaster/Self-Help Program. Site-wide evacuation will be conducted per existing traffic control protocols. Evacuation of offsite locations, if recommended, will be conducted by the appropriate offsite authorities using their established procedures and protocols.

Subsequent protective action options following shelter or evacuation orders may include:

- Personnel decontamination
- Equipment decontamination
- Medical care
- Ad hoc respiratory protection
- Access control
- Shielding

8.3.3 Offsite Protective Action Recommendations

LLNL protective action recommendations for protection of offsite populations are developed using the same criteria as onsite protective actions. Offsite recommendations are implemented at the discretion and direction of local authorities who will implement the recommended protective actions per local jurisdictional procedures.

8.3.4 Personnel Accountability/Evacuation

A system of evacuation and accounting for facility personnel is described in the LLNL *ES&H Manual*, FLEPs and/or the Disaster/Self-Help Plans, and in individual FSPs, as applicable. Following an evacuation order, onsite personnel will be accounted for by one of the following systems:

- **Roll-call system:** A roll-call system records the movement of personnel to and from a facility or area. The system provides an immediate accounting of occupants in an area. Although this system is preferred, it is feasible in only a few LLNL facilities.

- **Exception system:** Accounting for personnel is accomplished by requiring all persons in the facility to report to a designated muster point immediately upon leaving the building. At the muster point, the names of personnel present are recorded, and designated facility personnel determine which persons are presumed to be missing based on occupant lists for the building or other information regarding the location of personnel.

8.4 Reentry

Where structural damage is apparent, reentry activities may fall into two general categories. The first type generally involves activities necessary to account for personnel and/or rescue activities and can only be carried out by Fire Department personnel. The second involves reentry into the affected area for the purpose of assessing the situation and planning recovery operations. This function also belongs to the Fire Department, assisted by Facilities and Infrastructure and ES&H Teams.

This section addresses the determination of appropriate actions for the rescue and recovery of persons and the protection of health and property during emergency response. Reentry activities related to recovery planning and event termination are described in Section 11 of the EPlan and in EPIP-91, *Emergency Termination and Recovery*.

- CFR 835.1302 contains requirements to be met when conducting these operations in response to a radiological hazard. The regulation provides dose guidelines for the control of exposure during specific types of activity. Although the regulation is designed for response to radioactive releases, the basic principles apply to most chemical hazardous material responses. The regulation begins with three basic principles: “1) The risk of injury to those individuals involved in rescue and recovery operations shall be minimized; 2) Operating management shall weigh actual and potential risks to rescue and recovery individuals against the benefits to be gained; and 3) Rescue action that might involve substantial risk shall be performed by volunteers.”

Reentry by First Responders to specific buildings or areas during an emergency must be approved by the on-scene IC (either the Fire Department Battalion Chief or PFD Security Incident Commander for security events), with the assessment that the facility be reentered safely.

8.5 Emergency Planning Zones

The Emergency Planning Zone (EPZ) for hazardous material accidents are described and analyzed in the individual facility EPHA per the processes defined in EPIP-63, *Emergency Planning Hazards Assessment*. In general, an EPZ is an area within which the results of an EPHA indicate the need for specific planning to protect people from the consequences of hazardous material releases. For Livermore site and Site 300, it was determined that a 2-mile

composite EPZ was appropriate based upon a summary of the EPZs for individual facilities onsite. The primary exposure pathway for the EPZ from hazards at the Livermore site and Site 300 is inhalation, although ingestion and absorption potential is also considered in EPHAs. The development and identification of this composite EPZ may be found in the *Composite Emergency Planning Zone*. Figures 8.1 and 8.2 of this EPlan depict the results of the EPZ development process for the LLNL Livermore site and Site 300, respectively, and show onsite and offsite areas that could be affected by emergencies at Sites 200 and 300. Protection of offsite residents in the EPZ is the responsibility of the IC; however, it is the duty of the ED to issue protective action recommendations to the IC, as well as to offsite authorities. Per verbal agreements with offsite agencies, offsite evacuation and sheltering plans to be used in an emergency are not pre-defined, but will be determined by the IC during the emergency. The IC may evacuate residents beyond the EPZ to simplify the logistics of moving residents.

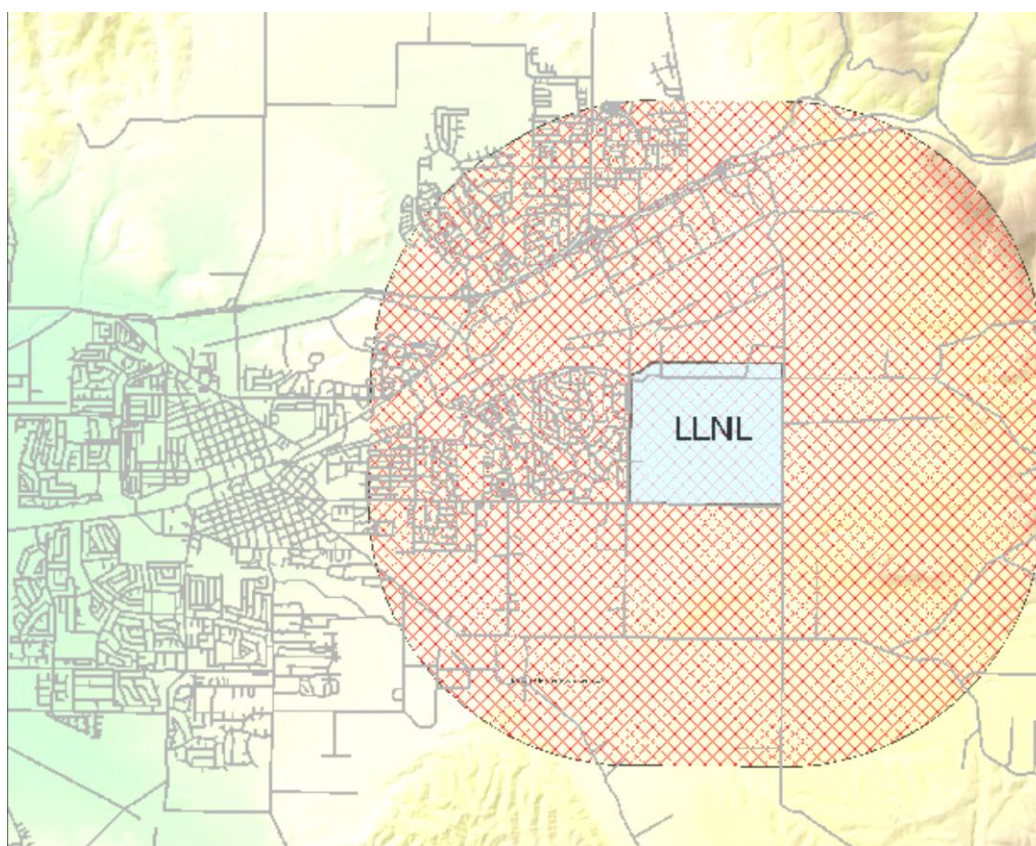


Figure 8.1 LLNL Livermore site Emergency Planning Zone

NOTE: Cross-hatched area depicts the two mile EPZ surrounding LLNL's Site 200

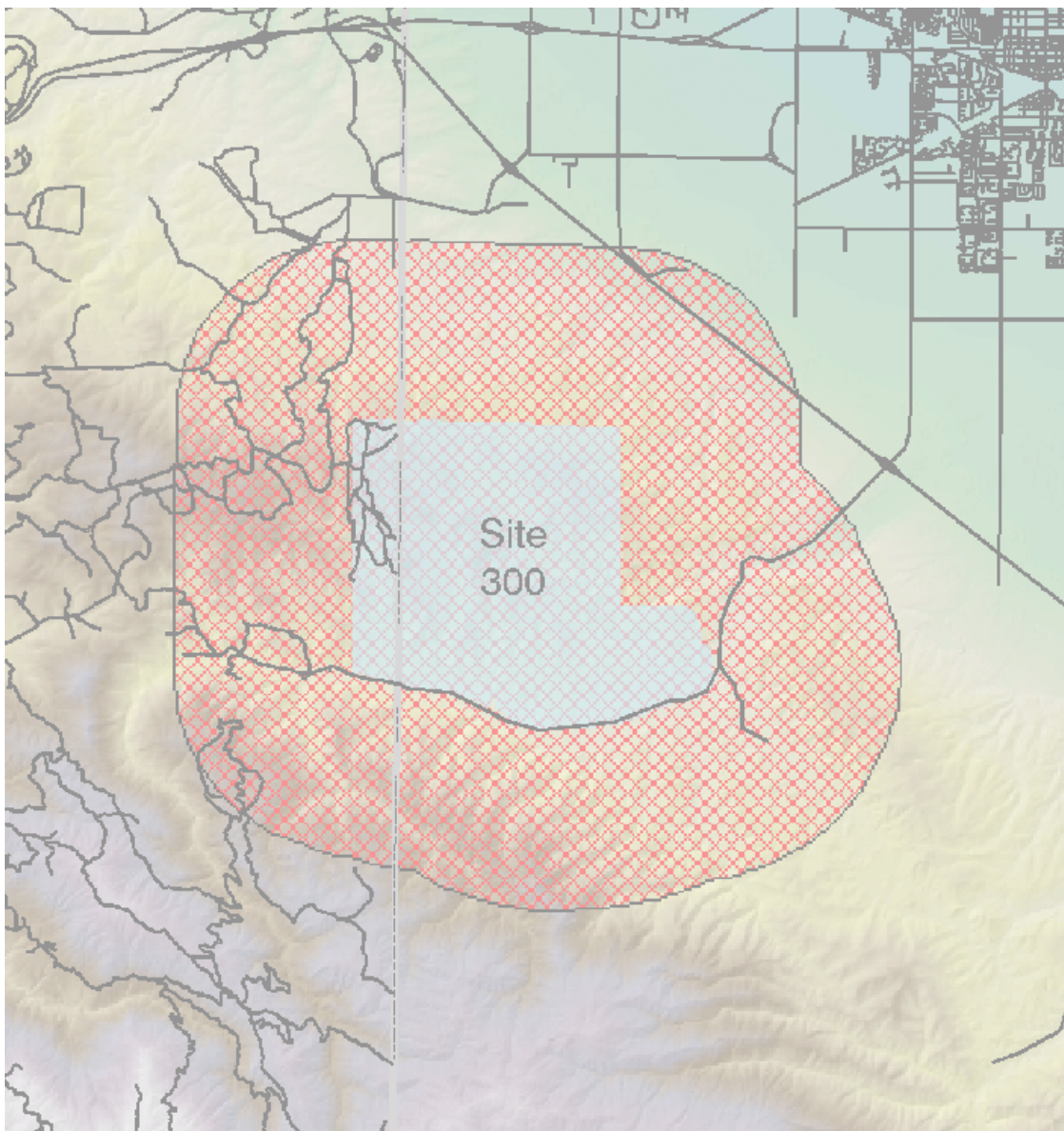


Figure 8.2 LLNL Site 300 Emergency Planning Zone

NOTE: Cross-hatched area depicts the two mile EPZ surrounding LLNL's Site 300

8.6 Communication

While the EMDO is able to monitor via radio activities directed by the IC, including initial protective measures for affected onsite personnel and offsite residents based on the initial size-up, the IC and EMDO will communicate via a telephone conversation to validate that the initial protective measures are consistent with the protective actions contained in the applicable EAL. Following activation of the Emergency Operations Center, the Fire Department will communicate with the EOC through the EOC Operations Section, although the IC and Emergency Director will communicate with each other directly at least initially, to communicate responsibilities and define what portion of the site is considered the incident scene that the IC will retain responsibility for protecting, and the balance of the site the Emergency Director will be responsible for protecting. Any protective action decisions for onsite personnel determined by the EOC should be coordinated with the IC. Protective actions for the public may be ordered only by public officials or their designees (e.g., Alameda County Fire Department, Livermore Police Department); the EMDO/ED will make protective action recommendations only, which will be communicated to offsite officials both on Emergency Notification Forms and via telephone conversations with the IC and local/state officials.

8.7 Termination of Protective Actions

During an OE, onsite protective actions will be modified or lifted at the direction of the ED following recommendation by the IC. This information will be communicated to appropriate onsite emergency response and facility personnel through established emergency communication systems. Changes to recommendations for affected offsite agencies will be communicated per EPIP-51, *Emergency Notifications*, following coordination with local decision-makers.

8.8 Shutdown of Operations

Shutdown of operations in facilities directly involved in the emergency is the responsibility of facility personnel, where practicable. If this is not feasible, shutdown will be performed by knowledgeable emergency response personnel.

Shutdown of operations in facilities not directly involved in the emergency is the responsibility of operations personnel in the building or facility.

Site response guides and facility procedures (e.g., Safety Plans - including FSPs and IWS/SPs) address shutdown for normal operations and emergencies. These procedures, which are developed and maintained by facility personnel and reviewed by the cognizant ES&H Team, are available to assist the operators in placing the building in a safe condition.

In addition, facility operations personnel are trained in the operation of the systems and take appropriate corrective actions based on their training, knowledge, and experience.

The Laboratory Director may declare that a public emergency exists that effectively prevents employees' attendance at work or the continuance of work at the Laboratory in a normal and orderly manner. A public emergency may include a natural disaster, such as fire, flood, earthquake or major storm, a man-made disorder, such as a demonstration, riot, or act of sabotage, or a significant disruption of electrical power or water service.

9 EMERGENCY MEDICAL SUPPORT

This section describes the system for medical support of Laboratory personnel, including those with radiological and/or hazardous material contamination during an emergency. See Section 4 of this document for specific facility and equipment information.

9.1 Medical Response System

Alameda County Fire Department personnel, paramedics and emergency medical technicians, are the First Responders to medical emergencies at LLNL. At the Livermore site, patients are evaluated and transported to the appropriate receiving facility in accordance with Alameda County Emergency Medical Services policies and procedures. In general, basic life-support patients are transported to the Health Services Department during normal working hours. Advanced life-support patients, as well as patients needing emergency medical assistance outside of normal working hours, are transported to the appropriate offsite receiving facility. Valley-Care Medical Center in Pleasanton is the primary destination. Patients who meet Alameda County critical trauma criteria are transported to Eden Medical Center in Castro Valley (designated trauma center for southern Alameda County). During normal working hours, the Health Services Department provides treatment for ill and injured employees on a walk-in basis in addition to scheduled services.

For Site 300, the primary offsite receiving facility is Sutter Tracy Community Hospital. For critical trauma patients, air ambulance transport may be utilized to transport patients to Eden Medical Center in Castro Valley or San Joaquin General Hospital in Stockton. The Site 300 satellite clinic is currently supported by a registered nurse providing a more limited range of services than those provided at the Livermore site, including walk-in services, scheduled appointments, and evaluation of ambulance transport for basic life-support patients. Consultation with a physician at the Livermore site will be obtained according to established patient treatment policies and procedures.

In the event of a multi-casualty incident at either site, the IC, in consultation with the Health Services Medical Director or designee, will resolve issues of triage and transport in accordance with ACFD emergency operations policies and procedures and the internal Health Services Department disaster plan.

In the event of a site-wide incident, such as an earthquake, where outside resources may be limited, the Disaster/Self-Help Program Plan is implemented. This plan provides for additional support in the areas of triage and transport of injured personnel by first-aid trained volunteers.

The Laboratory maintains MOUs with Eden Medical Center, ValleyCare Medical Center, and Sutter Tracy Community Hospital for services in the event of a chemical, biological, or radiological incident. Included in the MOU are provisions for joint training, drills and exercises,

equipment maintenance, personnel support and procedures including chelation for internal transuranic contamination.

9.2 Staff

Alameda County Fire Department personnel at LLNL are trained and certified as Emergency Medical Technician-I by Alameda County and the State of California. Additionally, some fire personnel are State of California licensed and Alameda County certified paramedics who provide 24 hours-a-day, 7 days-a-week coverage to the Laboratory as members of each company. See Section 4 of this document for additional staff and equipment information.

The Health Services Department, an Accreditation Association for Ambulatory Health Care accredited organization, is managed by a physician and includes physicians, nurse practitioners, registered nurses, clinical psychologists, physical therapists, x-ray technician, medical assistants and administrative personnel. Physician specialty training may include occupational medicine, emergency medicine, internal medicine, and preventive medicine. Nurse practitioners and nurses specialty training may include occupational health, adult health and emergency medicine. All professional staff members who work in the treatment area have received basic life-support training. Staff members who are authorized to function in the decontamination area have received radiation casualty management training from the Radiation Emergency Assistance Center/Training Site (REAC/TS). Physicians and nurse practitioners maintain advanced cardiac life-support training. All licensed professional staff maintain current state licenses. Psychologists are available and trained in crisis intervention.

The satellite clinic at Site 300 is staffed by a registered nurse during normal work hours, providing basic health services and first aid. Off-hour support is provided by the Fire Department.

9.3 Equipment and Supplies

Disaster/Self-Help supplies and equipment are assembled and maintained by the Emergency Programs Organization in coordination with LLNL senior management. They are stored in large, clearly-labeled Disaster/Self-Help containers located near each assembly point. There are approximately 100 boxes located throughout the Livermore site and Site 300.

Patients contaminated with radioactive or toxic materials are treated in the Livermore site's Health Services Department decontamination area. This area is designed to protect the environment from contamination (see also Section 4). Bioassay and whole-body counting equipment for radiological contamination assessment is provided by the Radiation Protection Functional Area.

Equipment, instrumentation, and personal protective equipment for the support of radiological incidents are housed at Sutter Tracy Community Hospital, ValleyCare Medical Center and Eden

Medical Center in accordance with the MOUs, as well as at the main Health Services site. The Radiation Protection Functional Area is responsible for maintenance of this equipment.

Medical supplies for the administration of chelation therapy for patients with internal radiological contamination are stored in the Fire Department ambulances for transport to ValleyCare and Eden Medical Centers as well as at the main Health Services site. This equipment and medication is supplied and maintained by the Health Services Department.

9.4 Transportation and Evacuation

Injured personnel are transported from the scene to either Health Services or the appropriate offsite facility (see Section 9.1 above) by LLNL owned ambulance (two at the Livermore Site 200; one at Site 300) or private ambulance arranged by ACFD. Personnel with known or suspected contamination are transported to the decontamination entrance of the Health Services Department.

Critically injured and chemically, biologically, or radiologically contaminated victims are transported directly to Eden Medical Center by the Fire Department. Air ambulance service is requested in accordance with Alameda County critical trauma protocols and ACFD emergency operations policy and procedure by the IC. The ACRECC is responsible for dispatch of the next available air ambulance. LLNL will provide equipment and expertise, as needed, at the receiving facilities in support of chemically, biologically, or radiologically contaminated victims in accordance with the MOUs.

Communication to the receiving facility is the responsibility of the initiating organization. LLNL will communicate in accordance with the Alameda County EMS policy and procedure, and will also notify the Health Services Department of the transport. Medical staff at the Health Services Department will contact the receiving hospital regarding personnel transported from either medical facility.

Special evacuation procedures are not needed for Health Services.

9.5 Communications

In addition to dispatching for the Livermore site and Site 300, ACRECC provides dispatch service for a large portion of eastern Alameda County. ACRECC is located at the Livermore site and operates under Alameda County EMS and Cal OES policies and procedures. When operational, the EOC monitors 400 MHz emergency radio traffic between the IC and dispatch. This radio is also monitored by the Health Services Department during normal work hours. The IC will keep the Health Services Department informed about the status of situations involving injured personnel. During normal work hours, the Health Services Department has responsibility for notifications to Laboratory management and family members with regard to ill or injured employees; outside of normal work hours, the LEDO has notification responsibility. In the event

of an OE, LLNL will utilize the State Incident Command System for communication and mobilization of resources at the direction of the IC.

Additional communication tools include the WebEOC[®] communication system and the VERG network. The WebEOC[®] communication system is used by the EOC and the DOCs to record and monitor information during OE events.

10 EMERGENCY PUBLIC INFORMATION

The Laboratory's Public Affairs Office (PAO) is responsible for providing timely and accurate information to the community, news media and Laboratory workforce during and following an OE at LLNL. During an emergency, the PAO will act as the single point of contact for the news media, and as a principal source of information for Laboratory employees and community officials.

When appropriate during an emergency, the EMDO/LEDO will activate the Laboratory's EOC. When the EOC is activated and operational, the PAO Director or designee will serve as the Public Information Manager on the EMT in the EOC. Information developed for release to the public will be reviewed and approved by the Public Information Manager and the ED, with approval of the NNSA/LFO Emergency Manager or designee in the EOC. Public information releases also require a Derivative Classifier (DC) review if the EMT determines that the subject matter may involve sensitive or classified information.

The Director of Public Affairs at LLNL is responsible for preparation and maintenance of an *Emergency Public Information (EPI) Plan* for LLNL. This plan, which is reviewed biennially and revised as needed, defines the handling of emergency public information requirements associated with responses to accidents or incidents involving LLNL. The EPI Plan is considered part of the LLNL Emergency Management System, and is issued by the LLNL PAO with review and concurrence by the LLNL Emergency Management Program Administrator.

Per the EPI Plan, news media will be informed of an OE within one hour of event categorization should events require this action. An initial, pre-approved news release may be orally disseminated to local news media organizations. A written copy of such an initial oral news release will be issued to news media upon activation of the EOC.

The Public Information Manager will maintain contact with the emergency public information organization at NNSA/LFO and with LLNS, LLC.

10.1 Public Information Organization

The Public Information Manager directs the emergency response activities of the PAO. The Public Information Manager is supported by a Newswriter located in the EOC and by personnel staffing the PAO DOC or, if activated, the JIC.

Specialists in news media relations, community relations, and employee communications, supported by administrative and technical support personnel, staff the PAO DOC or the JIC. Under the direction of a PAO DOC Commander, who reports to the Public Information Manager, the PAO staff will respond to news media and public inquiries, issue news releases and other formal communications, host visiting news media, arrange news conferences and interviews, and

monitor news media reports. The PAO DOC Commander will apprise the ED and the EMT, through the Public Information Manager, of news media, community and employee interest in the emergency as well as rumors concerning emergency conditions or response.

10.2 Public Information Facilities

10.2.1 Public Affairs Office Department Operations Center

The PAO DOC serves as a communication center and work area for LLNL emergency public information staff and a briefing center for news media. The PAO DOC will be activated and used in the event of an OE that does not require or warrant JIC activation, or may be utilized until the JIC can be activated. New emergency information will be released from the PAO DOC via press releases and media briefings. Media monitoring, response to public and media telephone inquiries, employee communications, community relations, and rumor control will be handled from the PAO DOC. The PAO DOC includes work areas, a communications center and a news media briefing area capable of seating approximately twenty members of the media. (Note: The PAO DOC communications center is in B111, while the media briefing area is in T6575.) The PAO DOC is equipped with telephones, network lines for computer hookup, overhead and video projection capability, public address system, podium, copier, fax machine, radio and television sets, restroom facilities and adequate parking.

Key LLNL PAO staff are equipped with pagers, cellular phones, laptop computers and two-way radios with access to Laboratory frequencies. A PAO duty officer is on-call 24 hours-a-day, 7 days-a-week.

10.2.2 Joint Information Center

A Joint Information Center (JIC) may be established at the Robert Livermore Community Center at 4444 East Avenue in Livermore, CA. The JIC is the location for coordination and release of information in the event of an LLNL emergency with potential for offsite health and safety impact and need for public protective action. Public information officers from Federal, State, and local EROs will come together at the JIC to coordinate and release emergency information to the public through the news media. Emergency information will be released from the JIC via press releases and media briefings. Once activated, media monitoring, response to public and media telephone inquiries, employee communications, community relations, and rumor control will be handled from the JIC. A NNSA/LFO public information officer at this location will work with the LLNL JIC Manager to ensure coordination of information with offsite agency spokespersons. The JIC is equipped with telephones, network lines for computer hookup, overhead and video projection capability, public address system, podium, copier, fax machine, radio and television sets, restroom facilities and adequate parking.

An alternate location for the JIC is at the Alameda County Sheriff's OHS & ES in Dublin, California.

LLNL Public Affairs Office representatives may be dispatched to an emergency scene if conditions permit or to a local hospital to meet with news media that may travel to these locations.

10.2.3 Robert Livermore Community Center

In addition to serving as the primary JIC location, the Robert Livermore Community Center is also the Alternate PAO DOC. The Palo Verde Room at this location would serve as a work area for PAO staff and spokespersons, while the Larkspur Room would serve as the News Media Room. This facility is equipped with telephones, phone lines for computer hookup, overhead and video projection capability, visual aids, and informational handouts for news media, public address system, podium, copier, fax machine, restroom facilities, and adequate parking.

10.3 Public Education

The LLNL PAO has established an emergency public education program to ensure that information is disseminated annually to the public concerning emergency points-of-contact, protective actions, emergency response activities, and how the public will be notified should an emergency occur.

In coordination with appropriate offsite agencies, a brochure has been developed instructing the public about how they will be alerted and notified by local officials and actions to take in the event of a community emergency affecting the Tri-Valley area. In addition, as an ongoing activity, LLNL provides communications to Laboratory neighbors concerning safety, hazards, and emergency preparedness. Information will be strategically communicated using existing PAO community outreach and education programs.

10.4 Public Inquiries

In the event of an OE, the PAO will be the single LLNL point-of-contact for the news media and a principal source of information for Laboratory employees and community officials. PAO personnel will respond to calls for information from the general community as resources allow and will use news releases and other approved information to provide emergency public information to the public.

The PAO will also make available and publicize through the news media a telephone number and website the public may contact for updated emergency information. If the JIC is activated, all calls from the public and media will be referred there for response. Local government will support response to local public calls concerning the offsite emergency response and public health and safety.

10.5 Security

After activation of the EOC, the EOC Coordinator is responsible for identifying a Derivative Classifier for the EOC, who is responsible for reviewing documents that will be released to the public, including news releases, to ensure that sensitive or classified information is not released.

10.6 National Nuclear Security Administration Field and Headquarters Coordination

NNSA/LFO will assign a public affairs officer to the EOC, PAO DOC, and/or JIC, if activated, who will be responsible for communicating and coordinating with the DOE/NNSA HQ public affairs representative. If necessary, the LLNL Public Information Manager may communicate directly with the HQ representative or delegate such activity to the PAO DOC Commander or JIC Manager.

11 EMERGENCY TERMINATION AND RECOVERY

This section describes the responsibilities for OE termination and recovery. Recovery includes incident assessments and investigation, recovery planning, scheduling, repair, restoration and return or relocation. At LLNL, recovery planning and management of recovery activities are the responsibility of line management.

11.1 Emergency Termination

During an OE, timely decisions are required to ensure protective actions minimize the potential for health effects to onsite personnel and the public. The ED is responsible for terminating the emergency phase, completing appropriate notifications and entry into the recovery phase when the following general criteria are met:

- The emergency condition no longer exists and it appears unlikely conditions will deteriorate sufficiently to cause another emergency;
- Implemented personnel protective measures, both onsite and offsite, are relaxed or restricted to controlled areas;
- Evacuated areas may be re-entered though some clean-up and repair may be ongoing or required, or the areas will be isolated/controlled;
- The IC recommends that the ED consider termination;
- The EMT concurs if the EOC is activated and operational;
- Affected offsite response organizations concur; and
- If required, a recovery manager is appointed, a recovery organization is established, and a recovery plan is developed.

11.2 Recovery Operations

The purpose of the recovery effort is to return the affected facilities and areas to normal operations following the termination of emergency response. Normally, the Fire Department IC will formally transfer control of the incident scene (facility and local affected area) to the ES&H Team Leader upon stabilization of the scene and completion of Fire Department activities. However, the Security IC may elect to retain control of the incident scene as a crime scene.

Prior to emergency termination, the incident scene must be preserved so critical evidence will not be lost. This evidence is needed to determine what caused the incident (the root cause of the event) and prepare a formal accident report in accordance with Part 4: *Feedback and Improvement* of the *ES&H Manual*. Requirements and guidance for scene preservation are found

in Contractor Assurance Office procedure *PRO-0081, Accident/Incident Scene Management (Post Emergency Response)*. The incident scene has the potential to be a crime scene; as such, appropriate actions need to be taken to preserve the scene until appropriate law enforcement assumes control, if applicable.

The ED, IC, or ES&H Team Leader will use established reentry provisions when the emergency condition has stabilized and radiological or other hazardous material releases, if any, have been controlled and contained within established limits. The IC or ES&H Team Leader must authorize reentry actions that are conducted prior to the termination of the emergency.

Operational planning for facility reentry is the responsibility of the IC or ES&H Team Leader until the emergency has been terminated and will require detailed planning and consideration of safety precautions, including the use of appropriate protective clothing, respiratory protection, and specific criteria for aborting reentry.

The ED is responsible for appointing a recovery manager, with concurrence of line management and the EBCC, who is knowledgeable of the affected facility and will be responsible for developing and coordinating plans and schedules for recovery operations for both the facility and LLNL site. Plans and schedules for recovery operations must consider methods for protecting workers, other onsite personnel, and the general public. Once a recovery manager has been appointed, local planning for facility level recovery will require recovery manager approval of the plan.

The EOC, in coordination with NNSA/LFO and appropriate offsite agencies, is the focal point for the development of information to be disseminated to Federal, State, and local organizations regarding the emergency status and recovery operations. Recovery planning status information for the public will be released through appropriate State/local government agencies at either the JIC or individual agency public affairs offices.

11.2.1 Recovery Organization

Prior to emergency termination, a recovery organization will be established and led by the recovery manager. The recovery team is divided into four functional areas – Operations, Planning, Logistics, and Finance/Administration. Support staff to the team may include, but is not limited to, advisors from the following: Environmental Functional Area, Worker, Safety & Health Functional Area, Health Services Department, Facilities & Infrastructure Directorate, Public Affairs Office, and the Security Organization. Administrative, logistical, communications, and personnel support for the recovery effort are the responsibility of the recovery manager's department or program.

The responsibilities of the recovery manager may include:

- Meeting with the EBCC and/or Laboratory Director to develop a prioritization of critical programs, facilities, and operations for recovery

- Developing the overall strategic recovery plan following an OE that interrupts normal operation of the Laboratory
- Developing and/or approving a written recovery plan for a facility
- Selecting personnel to lead the recovery team functional areas: Finance/Administration, Logistics, Operations, and Planning
- Requesting support staff/liaison (e.g., ES&H, Security, Public Affairs) be assigned to the recovery team
- Managing the recovery effort
- Coordinating Laboratory interactions with contractors, vendors, and offsite organizations
- Communicating and coordinating with offsite Federal, State, and local officials as needed
- Approving media releases (in coordination with the EBCC and NNSA/LFO) regarding recovery
- Ensuring that recovery operations are documented
- Issuing a final report

Once the emergency has terminated, the appointed recovery manager reports to the Laboratory Director and/or EBCC. Since the EOC needs to be ready to activate in response to another OE, the recovery team will most likely work out of a location other than the EOC, such as the EBCC, a DOC, or other available facility.

11.2.2 Reentry Phase

Any facility that shows evidence of structural damage should not be entered by unqualified personnel. Fire Department personnel, assisted by F&I Structural Evaluation Assessment Field Teams and ES&H Teams, are qualified to enter a structurally-damaged building for situation assessment and recovery planning.

Where structural damage has clearly not occurred, reentry activities at a facility and locally affected areas are initiated when the emergency conditions have stabilized such that damage assessments can be safely accomplished. These activities should be conducted prior to the termination of the emergency to assist in recovery planning, or they may be conducted post-termination during the recovery phase of operations. The reentry plan should also describe: areas to be surveyed, anticipated contamination levels, protective equipment and shielding requirements, decontamination requirements and communications requirements. The recovery manager or ES&H Team Leader is normally responsible for the reentry phase during the post-termination recovery phase.

11.2.3 Recovery Phase

Once conditions have stabilized and termination of the emergency has been recommended, the recovery phase may be initiated. Steps in this process may include:

- Assessment of the health and safety of potentially affected workers
- Assessment of hazards from the impacted facilities
- Assessment of the airborne release or ground spill
- Assessment of damage to critical systems and functions
- Assessment of potentially-compromised security systems
- Assessment of the root cause of the event (accident investigation)

The recovery manager has responsibility for the recovery phase. Once this phase begins, the recovery team, in conjunction with the ES&H Team Leader, will provide the assessments above to the recovery manager.

11.2.4 Recovery Plan

The recovery plan, developed by the recovery team, is based on the information developed as described in Section 11.2.3 above, and may consist of the following elements:

- Identification of the impacted area through sampling and monitoring surveys.
- Identification of impacted facilities within the impacted area, and prioritization of these facilities based on their functional importance. The identified facilities will also include affected utility systems such as power, water, and communications.
- Characterization of hazards and identification of appropriate remediation methodologies.
- Identification of available recovery resources and those that must be obtained from an alternate source.
- Prioritization of recovery tasks.
- Recovery schedule. The schedule may be updated as new resources are acquired and priorities are identified or shifted.
- Procurement of additional resources to support recovery operations.
- Notifications to and coordination with offsite agencies, including applicable regulatory notifications (e.g., the EPA).
- Identification of procedures and ES&H documentation (e.g., IWSs, DSA, USQs) needed for the recovery effort.
- Identification of critical activities and priority for resumption.

11.2.5 Resumption of Normal Operations

When the criteria established by the recovery team have been met and approval has been granted by cognizant organizations and agencies, the affected areas and facilities may be returned to normal operations, or operations relocated as necessary.

12 PROGRAM ADMINISTRATION

12.1 Emergency Programs Administration

The Head of the LLNL Emergency Management Department serves as the Emergency Management Program Administrator.

James D. Colson
Lawrence Livermore National Security, LLC
Lawrence Livermore National Laboratory
L-656
7000 East Avenue
Livermore, CA 94550
925-423-6983

The Emergency Management Department includes the Emergency Programs Organization. The Emergency Programs Organization Manager manages the emergency preparedness program under the oversight of the Emergency Management Department Head.

12.2 Documentation

The EPO staff ensures adequate documentation and maintenance of technical data that supports the overall emergency preparedness program. This information generally falls into three categories: technical supporting information, emergency preparedness documents, and records. The Program Administrator ensures that up-to-date (and controlled, if applicable) copies are maintained, information is properly distributed and documents are updated when needed or required. Technical supporting information includes diagrams, illustrations, maps, procedures, equipment lists, and document references.

In addition to supporting information, EPO administers the development of documents such as hazards assessments, ERAP, and EPZ documentation. Records that are important to maintain in an auditable form include training records, drill and exercise records, evaluation reports and records resulting from actual OEs.

The Program Administrator also determines which emergency management records are considered vital, and ensures the proper storage and availability of vital records essential for the continued functioning, operation, or reconstitution of a site organization/activity during or after an emergency.

Document Control

The EPO Manager is responsible for LLNL Emergency Programs document distribution and updates. The Program Administrator determines and ensures appropriate controls are placed on each document, based on the need for review, approval, distribution, and change control. Format,

content and overall control of these documents is described in EPIP-141, *Emergency Programs Administration*. All documents are marked if required and secured if necessary according to DOE/NNSA guidelines.

13 TRAINING AND DRILLS

The goal of the ERO training program is to ensure that the ERO is prepared to carry out emergency response functions during an emergency. The ERO training program is administered in accordance with EPIP-123, *Emergency Response Organization Training*, and the *ES&H Manual* Document 40.1, *Training Program Manual*. ERO drills are administered in accordance with EPIP-131, *Drills & Exercises*, and are covered in Section 14, Exercises.

There are two emergency management training program categories at LLNL: Emergency Preparedness Training and Emergency Response Organization Training. They are designed to meet the following goals:

- Provide general instructions to the onsite population regarding potential hazards, methods of alerting and protective actions that may be ordered
- Provide training to members of the ERO
- Provide problem solving drills to the members of the ERO to enhance their skills
- Continually improve emergency management/emergency response training incorporating new ideas and lessons-learned
- Provide appropriate offsite agencies the opportunity to participate in selected LLNL training
- Provide a cadre of trained evaluators and controllers for the drill/exercise program

13.1 Courses

The actual functions performed and responsibility levels of the ERO position are used as the basis for an individual's required training courses. Institutional training requirements for a specific position are approved by the LLNL training program committee and are identified in the Laboratory's course catalog. Non-institutional courses may be scheduled as needed.

13.2 Training Requirements

Each ERO training course is developed with terminal and enabling learning objectives that are contained in a course syllabus. The course syllabus also contains additional design elements such as duration, method of delivery, prerequisites and credit hours (where applicable) and retraining frequency. An outline and complete matrix of the ERO training courses and associated ERO drills are contained in EPIP-123, *Emergency Response Organization Training*.

13.3 Examinations

Student examinations, which may be written, web-based, or hands-on demonstration of skills, are based on course learning objectives. These examinations are provided with initial and refresher ERO training courses. Results of ERO training course examinations are maintained by the records office of the Safety and Education Training Division within the ES&H Directorate. Examination materials are maintained in a location available only to Emergency Programs Organization instructional staff and other authorized personnel.

Remedial Training Policy

Remedial training is additional training provided to a participant who did not correctly answer the required number of test questions or who was unable to successfully complete a formal training session. Because remedial training requirements are lesson-specific, they are incorporated into each lesson plan or practical so they are ready for use in case they are needed.

For example, the lesson plan for EM9001, *Initial Emergency Response Organization (ERO) Training*, states that after all participants have completed the test, the instructor will review the test questions with all students. Any questions answered incorrectly, the instructor will re-cover the material to the extent necessary to ensure understanding of the material with which the participant had difficulty.

Likewise, with the practical evaluations and lesson plans, the practical evaluator will discuss the participant's performance and, as necessary, remediate any "failed" items. The areas requiring remedial training are noted on the practical evaluation sheet.

The remedial training is intended to raise the individual's competency to a level that allows attainment of the knowledge and skills required to successfully complete the lesson or demonstrate the skill proficiency required to perform the job.

13.4 Recordkeeping

The Livermore Training Records and Information Network (LTRAIN) requirements tracking module is the Laboratory database used to track the training requirements applicable to a person's assignment at the Laboratory. LLNL training policy requires that course completion records be entered into LTRAIN within ten business days. Additionally, a summary of the ERO training requirements for emergency response personnel and emergency preparedness courses provided at LLNL is included in EPIP-123, *Emergency Response Organization Training*. It also describes recordkeeping for training, instructor qualification, and training support provided to complement the basic cadre of ERO training that is made available to LLNL staff. The Safety and Education Training Division is responsible for entering ERO training records into LTRAIN.

13.5 Site Personnel

A web-based training curriculum has been developed for LLNL site personnel and is also available to site visitors, vendors and sub-contractors. A second web-based training program has been developed to inform LLNL personnel of any changes or modification to the EPlan.

The LLNL Disaster/Self-Help Program is primarily designed to handle emergencies that would result from a regional earthquake or other similar catastrophe. The Disaster/Self-Help Program provides an organization that will respond to emergencies at LLNL when there may be no immediate response from the LLNL ERO or other professional emergency response organizations. Personnel assigned to Disaster/Self-Help organizational positions are typically not emergency response professionals. The Disaster/Self-Help Program is also designed to train employees who assist in the safe and orderly evacuation of other employees.

The Facility-Level Base Program differs from the Disaster/Self-Help Program in that it focuses on events where professional emergency response personnel are immediately available to take charge of the emergency response efforts at a facility or localized area. The Facility-Level Base Program training provides information on the development of the Facility-Level Emergency Plan (FLEP), the roles and responsibilities of those implementing the plan, and the roles and responsibilities of the facility/building occupants.

13.6 Offsite Training Support

Regular meetings of the City of Livermore Disaster Council, the Alameda County EMA, and CESA are scheduled and held to share training opportunities and plan cooperative responses to emergency conditions.

13.7 Offsite Personnel Training

LLNL provides selected training to appropriate offsite responders on an as-needed basis. For those service support organizations (mutual aid) that may enter the site as a part of their response, training also includes site access procedures and site familiarity. In addition, appropriate offsite agencies are offered the opportunity to participate in annual drills/exercises and response personnel training.

LLNL provides emergency training to the local offsite medical facilities (Eden Medical Center, Castro Valley; ValleyCare Medical Center, Pleasanton; and Sutter Tracy Community Hospital, Tracy) on an alternating annual basis. A drill is conducted at these facilities in coordination with this training.

13.8 Instructor Training and Qualification

Staff members who have met instructor qualification requirements are used to deliver emergency preparedness training curriculum. The qualification of available staff is administered by the Safety and Education Training Division leader, upon completion of criteria set forth in EPIP-123, *Emergency Response Organization Training*.

13.9 Drills

The Emergency Management Training and Drill program at LLNL provides workers at LLNL, who may be required to take protective actions such as assembly, evacuation, and/or shelter, with initial training and periodic drills. The training is provided at the time of employment, when employee's responsibilities change, or when emergency concepts of operations change. Initial and periodic refresher training is also provided to applicable personnel who may be required to take action associated with an emergency (i.e., assisting in the safe and orderly evacuation of other employees).

A thorough description of the drill program at LLNL is available in *Implementation Guidance for the Facility-Level Base Program*, LLNL-MI-550791, as well as EPIP-123, *Emergency Response Organization Training*, and EPIP-131, *Drills & Exercises*.

In addition, LLNL has developed an Operational Drill program to ensure facilities are prepared to deal with a variety of potential emergencies that are commensurate with the hazards present. LLNL ES&H Manual Document 22.1, *Emergency Preparedness and Response*, Section 2.3.2, directs Emergency Planning Hazards Assessment (EPHA) facilities to have a documented, internal facility-level operational drill/exercise program apart from the institutional-level site-level exercise program. These facility-level operational drills provide supervised, hands-on training for facility occupants utilizing facility-specific response expectations inclusive of protective actions. Facility-level operational drills are developed, conducted, evaluated using objectives and associated evaluation criteria, and documented. Evaluation criteria for operational drills are developed from facility-specific policies and procedures. Fire Department and Security participation is encouraged in operational drills. Operational drills help responders develop proficiency in performing emergency activities such as notification, communication, fire control, medical planning, and hazardous materials response, which are also exercised as part of the Operational Emergency Hazardous Material Program. Guidance on how to develop, conduct, evaluate, and develop lessons-learned from operational drills is contained in *Implementation Guidance for the EPHA Facility-Level Operational Drill Program*, LLNL-MI-548011.

14 EXERCISES

14.1 Exercises

Exercises are conducted to evaluate/validate emergency response training and to assess LLNL's ability to respond to an emergency. The exercise critique and evaluation process provides feedback for improving plans, facilities, equipment, training and emergency response performance. Participation is required for personnel who would be expected to participate in an actual emergency response. Emergency exercises require substantial effort to plan and coordinate effectively. The use of a realistic scenario and adequate controls enhances the validity of the drill/exercise to evaluate operational procedures and EIPs. ERO drills/exercises are administered in accordance with EIP-131, *Drills & Exercises*. This EIP provides direction for planning, developing, conducting, and evaluating exercises, including evaluated drills, in which EPO is the institutional lead.

An exercise is a comprehensive performance test of the integrated capabilities of the ERO. Exercises test the adequacy and effectiveness of:

- Organizational command and control
- Implementation procedures
- Notifications and communications networks
- Emergency equipment
- Training
- ERO performance
- Overall emergency response program performance

Exercise-specific objectives define the exercise scope, specify the emergency response functions to be demonstrated, identify the extent of organizational/personnel participation, and identify the spectrum of exercise activities to be accomplished or simulated. Not all emergency response elements are demonstrated in every exercise, and a systematic approach is used to demonstrate all ERO capabilities over a period of five years.

The LLNL exercise program validates the various emergency response elements over a multi-year period. The program provides periodic drills and exercises to evaluate emergency response capabilities and ensure that members of the ERO are prepared to respond appropriately to an actual emergency. The program also ensures that the local offsite organizations are offered participation in an exercise at least every three years.

Specifically, the exercise program provides the following:

- Management and administration of the exercise planning process
- Conduct of exercises
- An evaluation process
- An improvement process that includes lessons-learned and corrective actions

14.1.1 Exercise Design and Development

Planning and scheduling of exercises requires the involvement and cooperation of multiple organizations at LLNL. To that end, the EPEPC was developed. The EPEPC is chartered to provide consistent direction and guidance for the planning, preparation, conduct, control and evaluation of integrated drill and exercise activities at LLNL. See EPIP-131, *Drills & Exercises*, for a more detailed discussion of the EPEPC, its membership and charter.

A scenario development working group comprised of representatives from affected organizations/agencies/facilities is established for each exercise evolution at LLNL. The scenario development working group is co-chaired by a representative from the organization of primary focus for the exercise, and contains members from the planning committee along with selected specialists. DOE Guide 151.1-3, *Programmatic Elements*, Table 3-1 provides the general framework for the planning process at LLNL.

14.1.2 Exercise Package

The exercise package contains all the documentation necessary to execute, control, and evaluate the exercise; however, the extent of information will vary with the scope and complexity of the specific exercise. The exercise package is developed in accordance with DOE Guide 151.1-3, *Programmatic Elements*, as described in EPIP-131, *Drills & Exercises*.

14.1.3 Control and Evaluation Process

Exercises are controlled and evaluated in accordance with DOE Guide 151.1-3, *Programmatic Elements*, and as required per EPIP-131, *Drills & Exercises*. Controllers are assigned to each venue participating in the exercise. Controllers are also formally trained, including exercise-specific training. Controllers and evaluators, who participate annually in an exercise within their area of expertise, are considered current for the drill/exercise component of ERO training.

Exercises are formally evaluated based on evaluation modules developed from exercise objectives and implementing procedures. Evaluators have technical expertise in the area being evaluated, are formally trained on the exercise evaluation process and also receive training specific to the exercise they will evaluate.

Following an exercise, each venue conducts a hot-wash of exercise events. An all-hands critique, to include representatives from all venues, is also held. Critique information is documented, and

deficiencies and observations are developed. Deficiencies and observations are then analyzed and corrective action plans are developed, if applicable. Modifications to organizational plans and procedures as a result of these corrective actions are the responsibility of the individual organizations.

An evaluation report, which is a compilation of comments and observations by the evaluators, is developed per the format prescribed in EPIP-131, *Drills & Exercises*. The report is reviewed by the EPEPC for accuracy and completeness and delivered to NNSA/LFO within thirty working days after the exercise. Emergency Programs Organization publishes and distributes the final report, and corrective actions for issues identified are developed in accordance with EPIP-141, *Emergency Programs Administration*.

14.2 Offsite Coordination

Exercise activities associated with offsite organizations are coordinated by the LLNL Offsite Liaison. Scenario planning with participating offsite local, State, and Federal agencies, including DOE HQ, is performed by the LLNL exercise planning team, and may be accomplished via conference calls. Offsite partners of LLNL include, but are not limited to, SNL/CA, Livermore/Pleasanton Fire Department, Alameda County Fire Department, Livermore Police Department, Alameda County Office of Emergency Services, the California Highway Patrol, and the Zone 7 Water Agency.

15 READINESS ASSURANCE

The annual *Emergency Readiness Assurance Plan* provides documentation of the emergency planning and preparedness activities for LLNL and is based on the format prescribed by DOE Guide 151.1-3, *Programmatic Elements*, Appendix C. This format summarizes emergency preparedness program activities for the preceding fiscal year and projections for activities for the next fiscal year, and may be augmented with additional guidance from NNSA/LFO. Once the ERAP has been signed off by the Operations and Business Principal Associate Director, it is delivered to NNSA/LFO.

15.1 Self-Assessment

The Emergency Management Department conducts an annual self-assessment of the Comprehensive Emergency Management System described in this EPlan. This assessment is performed in accordance with LLNL Contractor Assurance Office issued QA Procedure *PRO-0052, Management Self Assessment*. An assessment plan is developed and approved prior to the assessment. Deficiencies and observations from the self-assessment are incorporated into the LLNL Issues Tracking System (ITS) as required by PRO-0052.

15.2 Corrective Action Program

Deficiencies and observations related to emergency preparedness and planning are formally tracked using ITS. The EPO self-assessment, ERAP, and other facets of emergency preparedness process maintenance are described in EPIP-141, *Emergency Programs Administration*.

15.3 Lessons-Learned Program

LLNL incorporates lessons-learned from simulated and actual emergency situations that have occurred at this site, other DOE sites, or similar hazardous material facilities. Lessons-learned from training and drill sessions are recorded and correlated with exercise evaluations, and other readiness assurance activities to determine additional training program needs.

Acronyms & Definitions

Term	Description
AAR	After Action Report
ACFD	Alameda County Fire Department
ACRECC	Alameda County Regional Emergency Communications Center. Located at LLNL it is operated and managed by the Alameda County Fire Department. Handles dispatching of Alameda County Fire Department stations 20 and 21 at LLNL. Also known as Fire Dispatch.
Activate	The order or direction from the responsible authority (e.g., LEDO, EMDO) to make the EOC or another emergency response facility operational.
Activation	Actions taken to activate, staff, set up, and make operational an emergency facility in support of emergency activities. Includes notification of the emergency response organization staff and notification of offsite agencies.
AEGL	Acute Exposure Guideline Level
Alameda County EMA	Alameda County Emergency Manager's Association
Alameda County Sheriff's OHS & ES	Alameda County Sheriff's Office of Homeland Security & Emergency Services
Alert	An OE that is expected to have significant impacts (Protective Action Guide or AEGL ₆₀ -2/ERPG-2/TEEL-2 exceeded) at or beyond thirty meters from the release point, but less than 100 meters and/or the facility boundary.
BART	Bay Area Rapid Transit
BEC	Building Emergency Coordinator
CAD	Computer Aided Dispatch
Cal OES	California Office of Emergency Services The State of California, Alameda County, and San Joaquin County all operate independent Offices of Emergency Services with whom LLNL may interface during an OE.
CALWAS	California Warning Alert System
CAS	Central Alarm Station
CESA	California Emergency Services Association
CHEMTRACK	Chemical Tracking System
Communicator! NXT	PC-based emergency notification system.

Term	Description
Contract 44	Prime Contract DE-AC52-07NA27344 between the DOE and the Lawrence Livermore National Security, LLC codifying the partnership that owns, manages, and operates LLNL.
COOP	Continuity of Operations
CRD	Contractor Requirements Document
DC	Derivative Classifier
DHS	Department of Homeland Security
DOC	Department Operations Center. Department Operations Centers are operated as necessary by Environmental Functional Area, Worker Safety & Health and Radiation Safety Functional Areas (Safety & Health), Health Services Department, Facilities and Infrastructure Directorate, Public Affairs Office, Security Organization (the Tactical Operations Center), and Site 300.
DOE	U.S. Department of Energy
DOE/NNSA HQ	Department of Energy /National Nuclear Security Administration Headquarters
DWTF	Decontamination and Waste Treatment Facility
EAL	Emergency Action Level. Specific criteria which provide guidance to categorize/classify an OE.
EBCC	Executive Business Coordination Center
ECN/VTC	Emergency Communications Network/Video Teleconference
ED	Emergency Director. The Laboratory Emergency Duty Officer becomes the emergency director when the Emergency Operations Center is activated and operational for an OE. The emergency director directs the Laboratory's institutional response from the Emergency Operations Center.
EDO	Environmental Duty Officer
EM	Environmental Management
EMC	Emergency Management Coordinator
EMD	Emergency Management Department (within the Facilities & Infrastructure Directorate)
EMDO	Emergency Management Duty Officer
EMS	Emergency Medical Service
EMT	Emergency Management Team. The emergency director/Laboratory Emergency Duty Officer, discipline managers and staff who report to the Emergency Operations Center during Operational Emergencies.
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency

Term	Description
EPHA	Emergency Planning Hazards Assessment
EPI	Emergency Public Information
EPIP	Emergency Plan Implementing Procedure
EPlan	Emergency Plan
EPO	Emergency Programs Organization. Emergency preparedness and planning group that is part of the Emergency Management Department in Facilities & Infrastructure Directorate.
EPEPC	Emergency Programs Exercise Planning Committee, which is composed of representatives from each LLNL emergency management team-represented organization including Health Services and any offsite community partner organization that wants to participate in and help to plan drills and exercises.
EPZ	Emergency Planning Zone. For LLNL, the emergency planning zone is defined as a two-mile planning area surrounding the plant site.
ERAP	Emergency Readiness Assurance Plan – annual emergency preparedness report update and projection.
ERO	Emergency Response Organization. Primary and alternate management and support personnel trained to carry out emergency response activities according to the EPlan and Emergency Plan Implementing Procedures.
ERPG	Emergency Response Planning Guideline (non-radiological threshold)
ES&H	Environment, Safety, & Health
EVA	Emergency Voice Alarm system
F&I	Facilities and Infrastructure
FA	Functional Area
FAM	Functional Area Manager
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FLEP	Facility-Level Emergency Plan
FM	Floor Monitor
FMT	Field Monitoring Team
FPOC	Facility Point-of-Contact
FSP	Facility Safety Plan
GE	General Emergency
General Emergency	An OE that is expected to have significant impacts (PAG or AEGL ₆₀ -2/ERPG-2/TEEL-2 exceeded) at or beyond the site boundary.
HazMat	Hazardous Materials

Term	Description
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High-Efficiency Particulate Air filter
HQ	Headquarters
HSD	Health Services Department
HVAC	Heating, Ventilation, and Air Conditioning
IC	Incident Commander (Fire and/or Security)
ICS	Incident Command System
IORB	Institutional Operations Review Board
ISM	Integrated Safety Management
ITS	Issues Tracking System
IWS	Integration Worksheet
JIC	Joint Information Center
LEDO	Laboratory Emergency Duty Officer – represents the Laboratory Director. Onsite or on-call at all times.
LFO	Livermore Field Office
LLNL	Lawrence Livermore National Laboratory, including the Livermore Site 200 and Site 300.
LLNS	Lawrence Livermore National Security, LLC (Livermore, CA). The management and operations contractor for LLNL, composed of Bechtel National, the University of California, BWX Technologies, Washington Group International, Battelle, and the Texas A&M University System.
LLW	Low-Level Waste
LTRAIN	Livermore Training Records and Information Network
LVOC	Livermore Valley Open Campus
MACS	Multi-Agency Coordination System
MCI	Mass-Casualty Incident
MFIL	Maximum Facility Inventory Limit
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
mph	miles per hour
NARAC	National Atmospheric Release Advisory Center. A part of LLNL's Chemistry, Materials, Earth & Life Sciences (CMELS) Directorate, supports the DOE, the Department of Defense, and the LLNL Emergency Operations Center by providing real-time assessments of the consequences from an atmospheric release of radioactive or toxic material.

Term	Description
NAWAS	National Warning System
NFPA	National Fire Protection Association
NIMS	National Incident Management System
NNSA/LFO	National Nuclear Security Administration/Livermore Field Office
NNSA/OST	National Nuclear Security Administration/Office of Secure Transportation
NWC	National Warning Center
NWS	National Weather Service
OC	Operations Center (DOE/NNSA HQ)
OE	Operational Emergency
OENRFC	OE Not Requiring Further Classification
Operational	State of the EOC, or any other emergency facility, once directed to activate, when activation steps have been completed, minimum staffing is present, and vital equipment is available to support the facility's operations.
ORB	Operations Review Board
ORDO	Occurrence Reporting Duty Officer
OSHA	Occupational Safety and Health Administration
P&I	Planning & Intelligence
PA	Protective Action
PAC	Protective Action Criteria
PAD	Principal Associate Director
PAG	Protective Action Guide (radiological threshold). PAG is defined as the fifty-year committed effective dose equivalent of one to five rem. At LLNL, the lowest value, one rem, is used for doses resulting from direct radiation or the uptake of materials that have a physical or biological half-life that is short compared to fifty years. Five rem is used for doses resulting from the uptake of long half-life materials. 100 rem is used as the threshold for early lethality.
PAO	Public Affairs Office
PAR	Protective Action Recommendation
PFD	Protective Force Division
PIO	Public information officer
PG&E	Public Gas and Electric
R&D	Research and Development
REAC/TS	Radiation Emergency Assistance Center/Training Site

Term	Description
Recovery	The operational phase following mitigation of an OE. The recovery phase involves those actions taken, after a facility has been brought to a stable condition, to return the facility to normal operation. The recovery phase includes accident assessments and investigation, recovery planning and scheduling, and repair and restoration.
Reentry	Time-urgent actions performed during emergency response such as search and rescue, mitigation, damage control, and accident assessment
SAE	Site Area Emergency
SAG	Stakeholders' Advisory Group
SAP	Safety Assessment Program
SDO	Security Duty Officer
SECON	Security Condition
SEMS	Standardized Emergency Management System
Site Area Emergency	An OE that is expected to have significant impacts (PAG or AEGL ₆₀₋₂ /ERPG-2/TEEL-2 exceeded) at or beyond the facility boundary, but not beyond the nearest site boundary.
Shelter	Protective action taken to reduce exposure to a risk (i.e., passing plume or to a plume containing easily filtered particulates such as transuranic compounds, or a security-related threat). Actions generally include: closing doors and windows; if deemed practical for a HazMat event, turning off HVAC; and remaining indoors until an all clear is issued.
SME	Subject Matter Expert
SNL/CA	Sandia National Laboratories/California
SP	Safety Plan
START	Simple Triage and Rapid Treatment
TCN	Temporary Change Notice
TEEL	Temporary Emergency Exposure Limit (non-radiological threshold). Values for airborne concentration thresholds of released materials which are based on requirements in the Occupational Safety and Health Administration, Environmental Protection Agency, and other exposure limits. Temporary Emergency Exposure Limit 2 (TEEL-2) is used for the classification of emergency events and the initiation of protective actions. Temporary Emergency Exposure Limit 3 (TEEL-3) is used as the threshold for early lethality.
Termination	Conclusion of an OE, including classified emergencies: Alert, Site Area Emergency, or General Emergency.
TOC	Tactical Operations Center (Security DOC)
TRU	Transuranic

Term	Description
UC	Unified Command
UP	Union Pacific
UPS	Uninterrupted Power Supply
USGS	U.S. Geological Survey
VERG	Volunteer Emergency Radio Group
WAPA	Western Area Power Administration
WebEOC®	Emergency information management system used to display information in the EOC and DOCs, and provide situational awareness for the EMT during the course of an OE.
WCI	Weapons and Complex Integration